

Compal Confidential

Hasswell M/B Schematics Document

Intel ULV Processor with LPDDR3/DDRIIIL

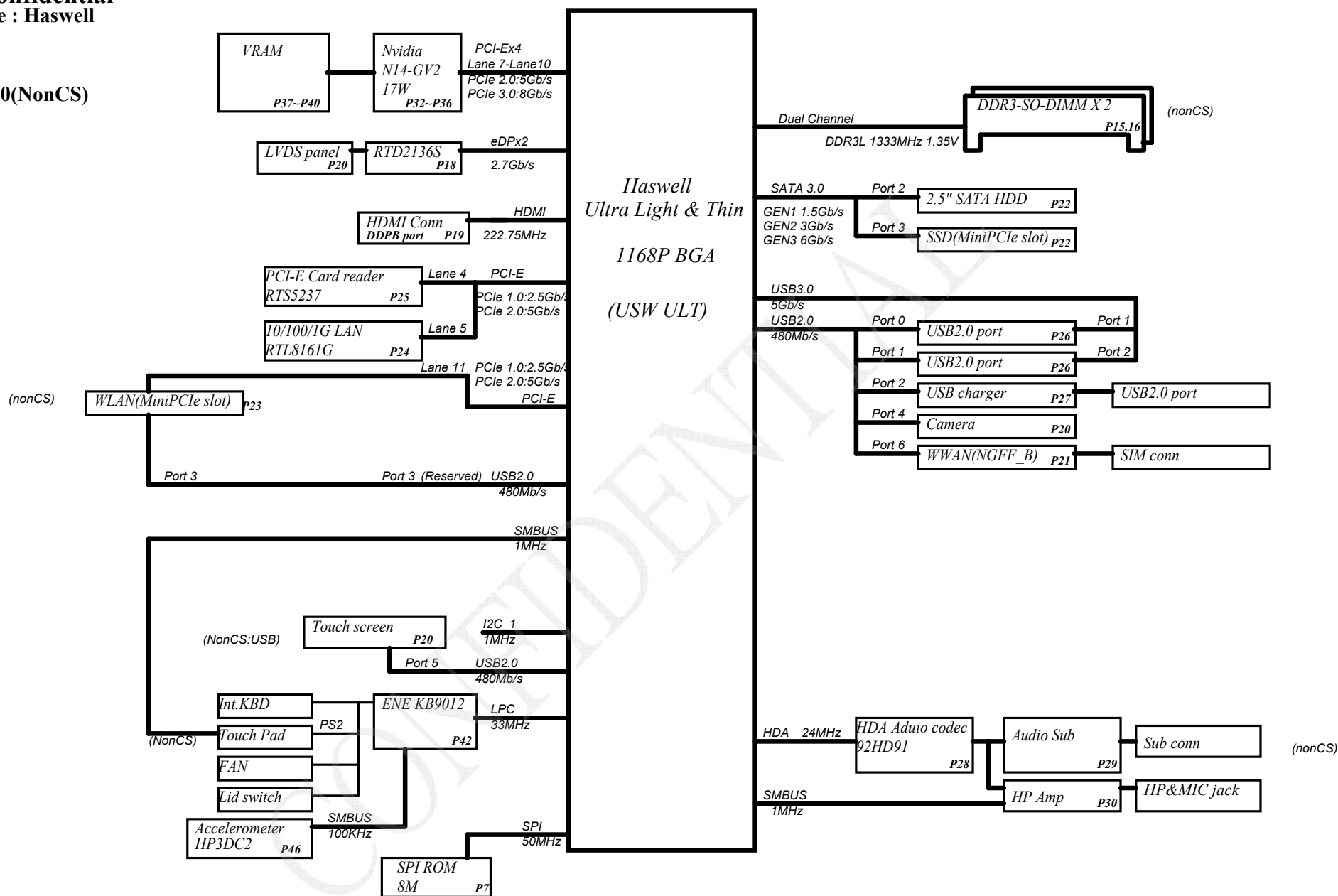
Date : 2013/06/26

Version 1.0

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Compal Confidential
Model Name : Haswell

File Name :
LA-9314PR10(NonCS)



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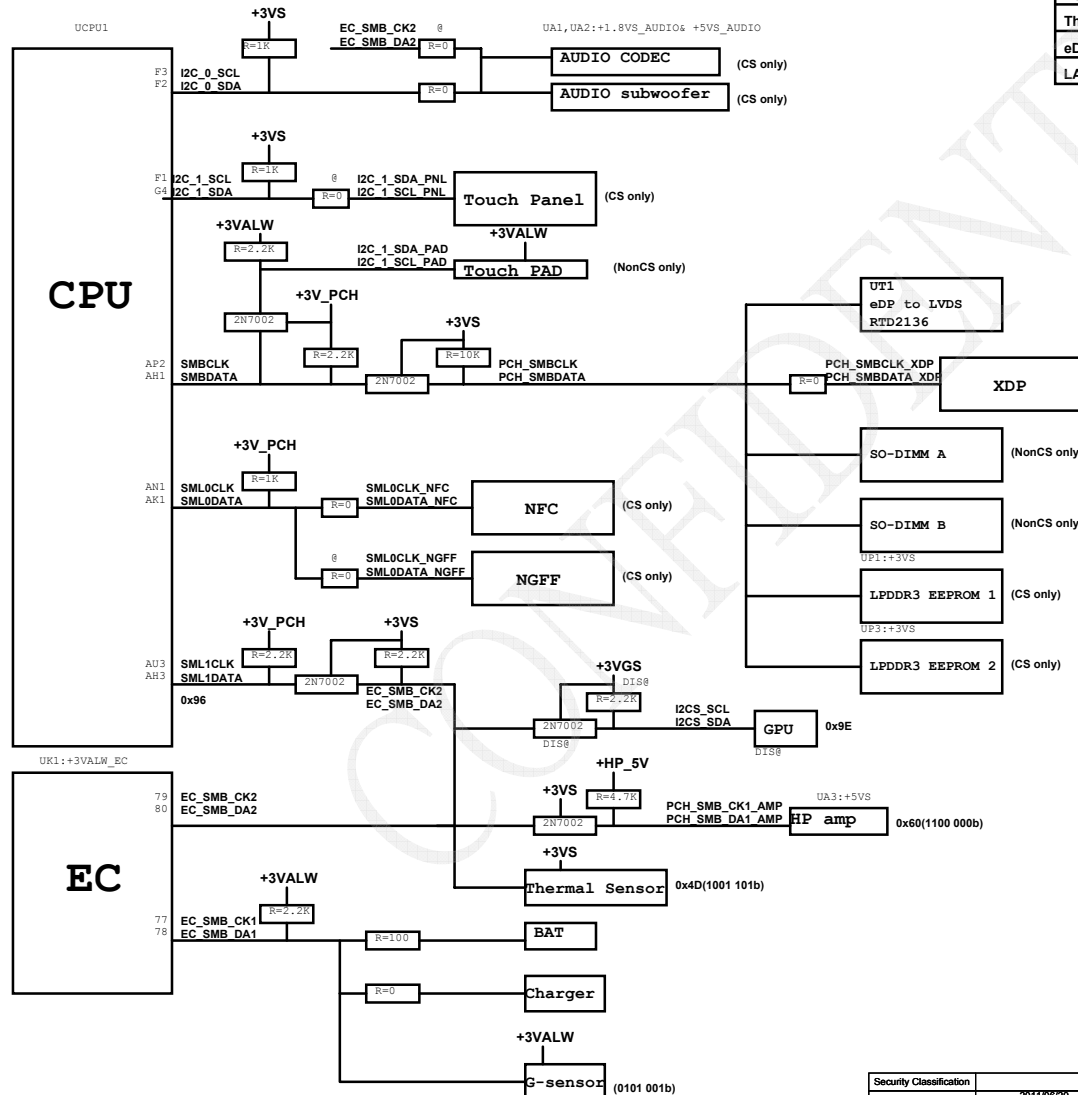
Power rail	Control (EC)	Source (CPU)
+RTCVCC	X	X
VIN	X	X
BATT+	X	X
B+	X	X
+VL	X	X
+3VL	X	X
+5VALW	EC_ON	X
+3VALW	EC_ON	X
+3VALW_EC	EC_ON	X
+3V_PCH	PCH_PWR_EN	X
+1.05V	SUSP#	
+1.8V	SYSON	PM_SLP_S5# / PM_SLP_S4#
+1.2V_1.35V	SYSON	PM_SLP_S5# / PM_SLP_S4#
+5VS	SUSP#	PM_SLP_S3#
+3VS	SUSP#	PM_SLP_S3#
+1.8VS	SUSP#	PM_SLP_S3#
+1.5VS	SUSP#	PM_SLP_S3#
+1.05VS	SUSP#	PM_SLP_S3#
+1.05VS_MODPHY	X	MPHY_PWREN
+0.6V_0.675VS	X	SM_PG_CTRL
+VCC_CORE	X	VR12.5_VR_ON

@ is NO SMT part (empty)
short@ : short pad , don't pop.
@EMI@, @ESD@, @RF@ : Reserve , don't pop.

RF@ : RF team request, must add.
EMI@ : EMI team request, must add.
ESD@ : ESD team request, must add.
LVDS@ : Support LVDS panel.
eDP@ : Support eDP panel.
DIS@ : GPU BOM config.
WWAN@ : For WWAN function.
VGU00@, VGU11@ : Board ID config.

<Power gating GPIO, wake ,INT and RST>

Device	Power gating GPIO	Enable (ON) CPU IC HW part	RST/IRQ	Wake/INT
NGFF SSD	X(Not support)			
NGFF WWAN	X(Not support)			
NGFF WLAN/BT				
WLAN (MiniPCIe) *	GPIO83	H H Load switch	GPIO34 *	GPIO54 *
USB3.0 CONN	GPIO13	L L USB switch		
USB3.0 CONN(Charger)	GPIO43	H H USB charger		
Card reader (PCI-E)	GPIO60	H H Load switch	GPIO93	GPIO94
USB2.0 Camera	GPIO25	H H Load switch		
Touch Panel	GPIO89	H H Load switch	GPIO52	GPIO50
Touch Pad -NonCS				
Touch Pad -CS *	GPIO88	L L PMOS		GPIO55 *
WWAN	GPIO84	H H Load switch		
SATA HDD/SSD	GPIO90	H H Load switch	GPIO38 X(Not support)	
mSATA	GPIO86	H H Load switch	DEVSLP2#/GPIO39	
Audio DSP + codec	GPIO76	H H Load switch	X(Not support)	
Thermal (EC)	X(Not support)			
eDP*	V	Load switch		
LAN (PCI-E)	GPIO12	H L Load switch	GPIO91	GPIO92

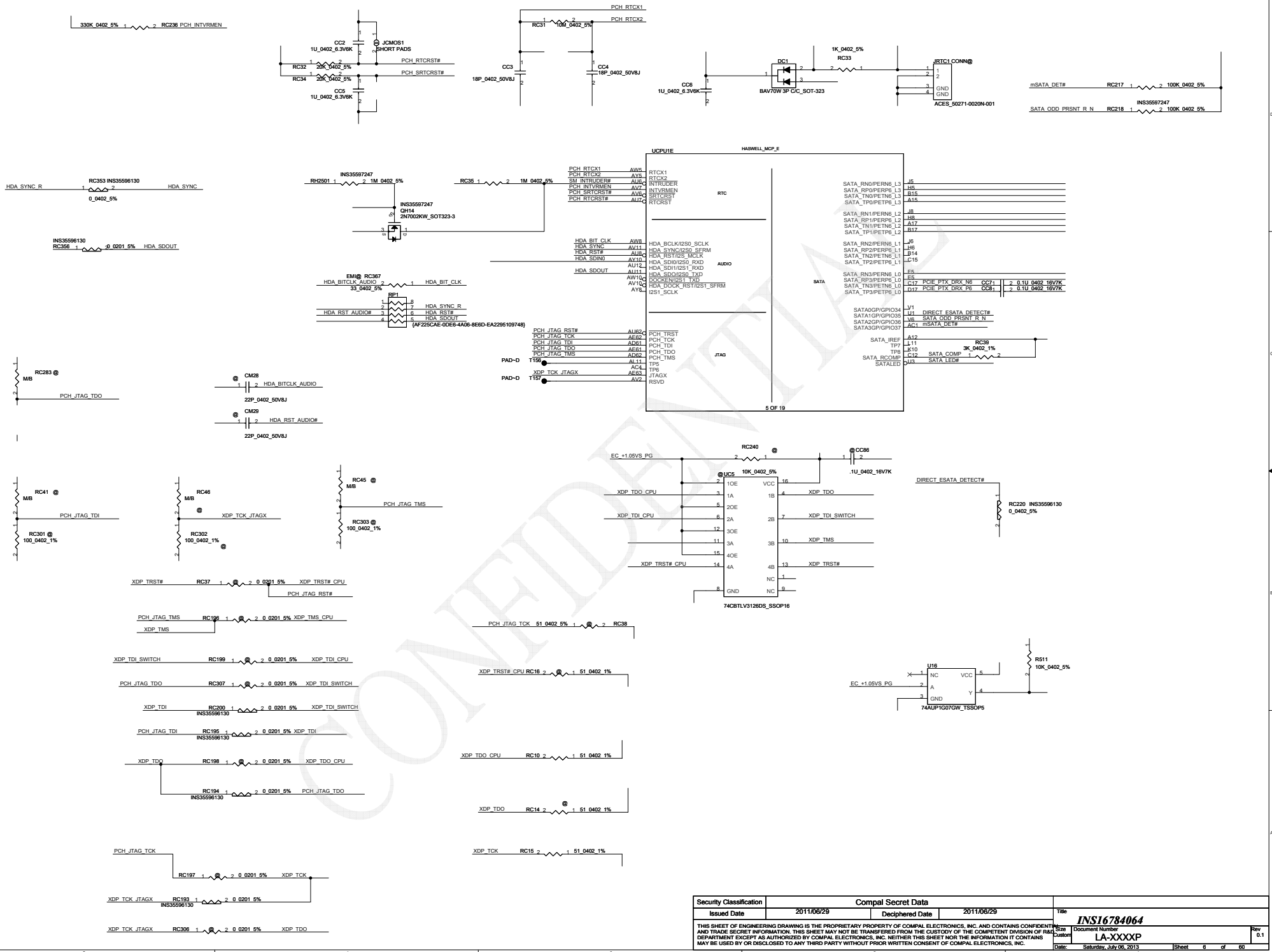


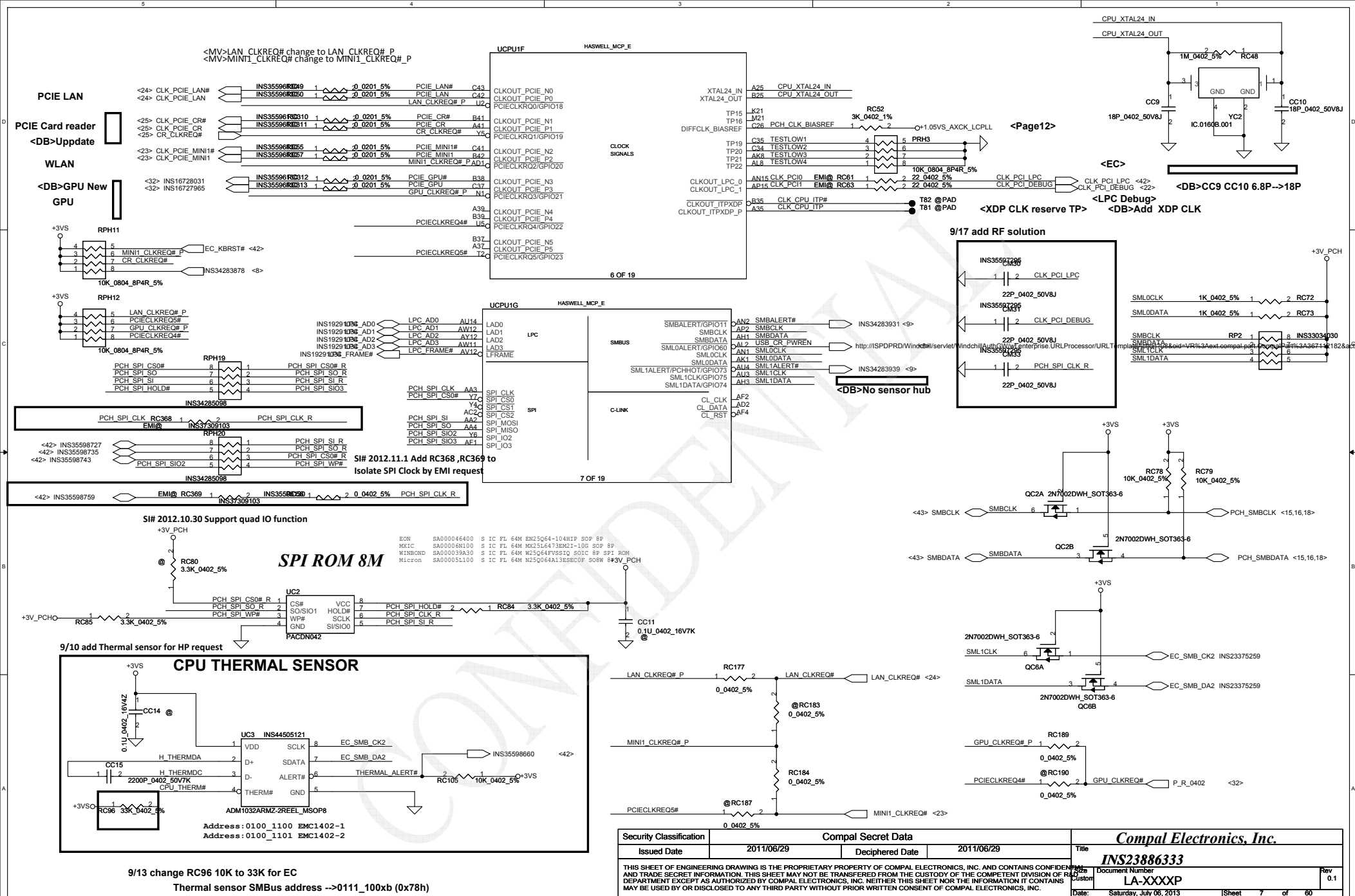
<USB2.0 port>

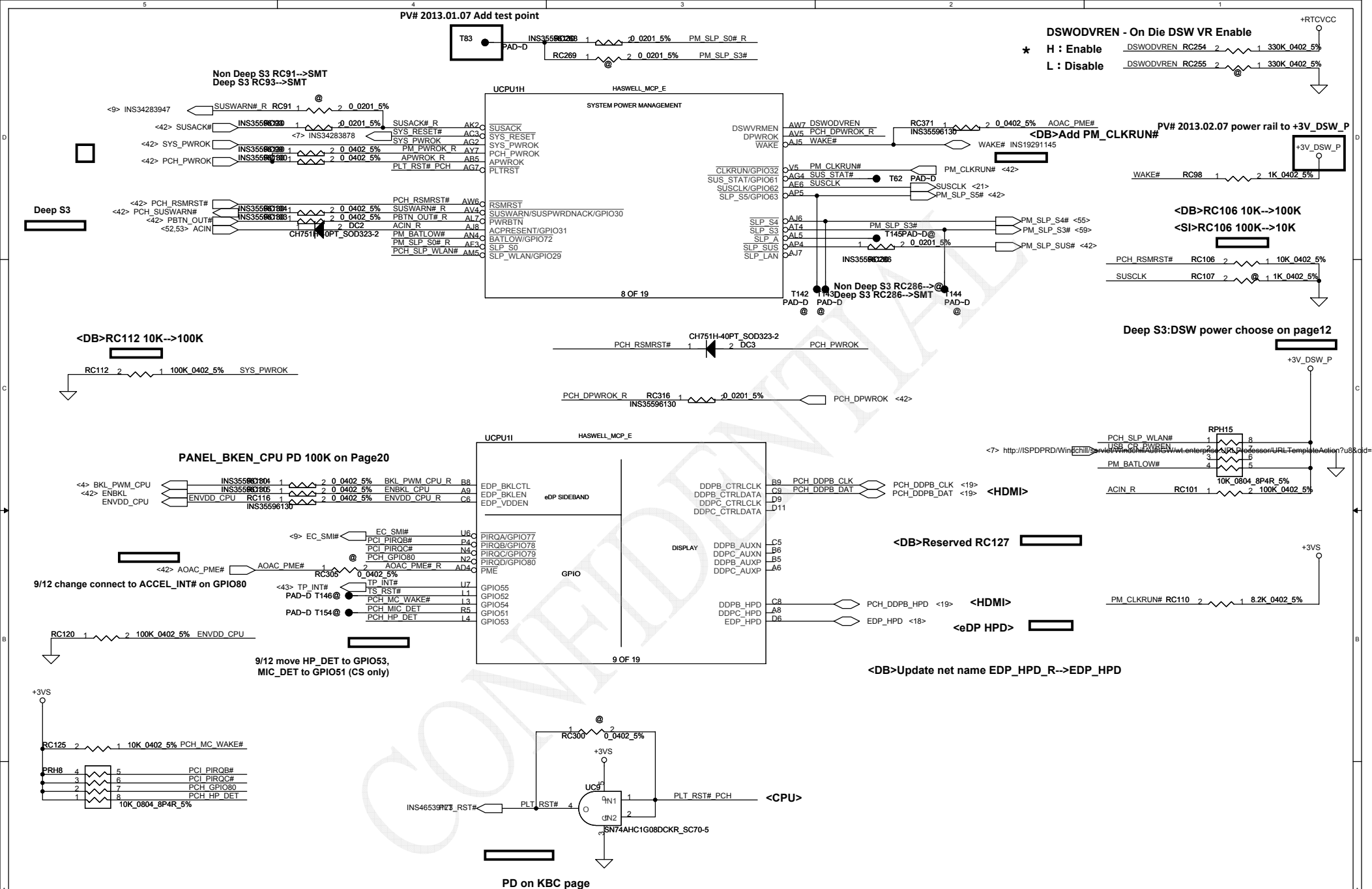
USB2.0 port	DESTINATION CS	NonCS
0	USB 2.0(left side)	USB 2.0(left side)
1	USB 2.0(left side)	USB 2.0(left side)
2	USB 2.0(right side)	USB 2.0(right side)
3	WLAN (NGFF)	WLAN (MiniPCIe)
4	Camera	Camera
5	No contact	Touch screen
6	WWAN	WWAN
7	Finger printer	Finger printer

<PCI-E, SATA, USB3.0>

Lane#	PCI-E	SATA	USB3.0	DESTINATION CS	NonCS
1			1	USB3.0	USB3.0
2			2	USB3.0	USB3.0
3	1		3	X(Not support)	X(Not support)
4	2		4	Card reader(PCI-E)	Card reader(PCI-E)
5	3			10/100/1000 LAN	10/100/1000 LAN
6	4				
7					GPU(DIS only)
8					GPU(DIS only)
9					GPU(DIS only)
10					GPU(DIS only)
11	L3	3		WLAN (NGFF)	WLAN (MiniPCIe)
12	L2	2		X(Not used)	X(Not used)
13	L1	1		SSD(mSATA)	SSD(mSATA)
14	L0	0		2.5"HDD	2.5"HDD

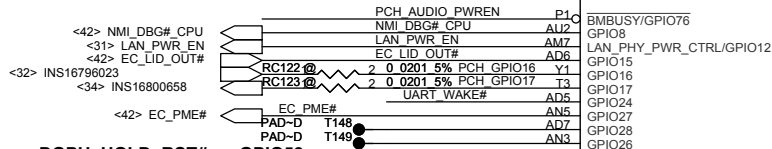






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9/12 reserve EC_FB_CLAMP_TGL_REQ# on GPIO16
9/12 reserve DGPU_GC6_EN on GPIO17



9/12 reserve DGPU_HOLD_RST# on GPIO58

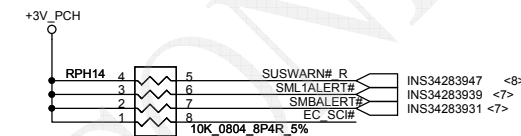
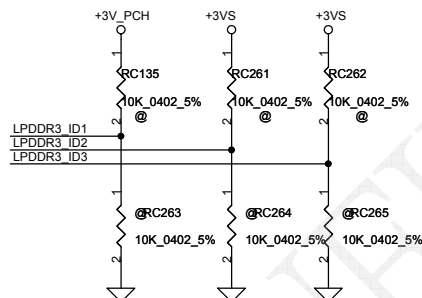
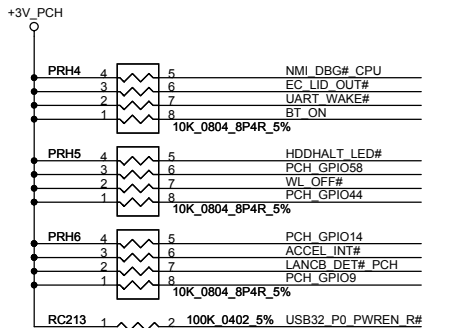
No sensor hub
No sensor hub

No sensor hub

10/23 [SI] change ACCEL_INT# to GPIO46

<DB>CS only PCH_HP_DET#

PCH_GPIO81(HDA_SPKR):NonCS only



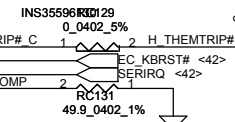
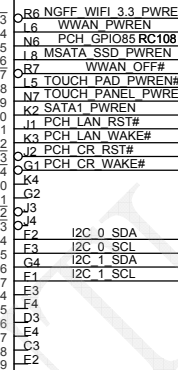
DSW power choose on page12

GPIO27 RC277 1 2 10K_0402_5% EC_PME#

PCH_GPIO27 (Have internal Pull-High)
High: VCCVRM VR Enable
Low: VCCVRM VR Disable



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<DB>Add WWAN_PWREN

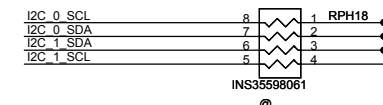
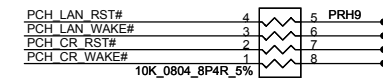
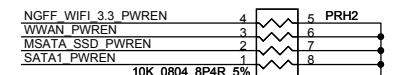
DG V0.9 PCH_OPIRCOMP
Width=12mil,spacing=12mil
Max length=500mil

Boot BIOS Strap

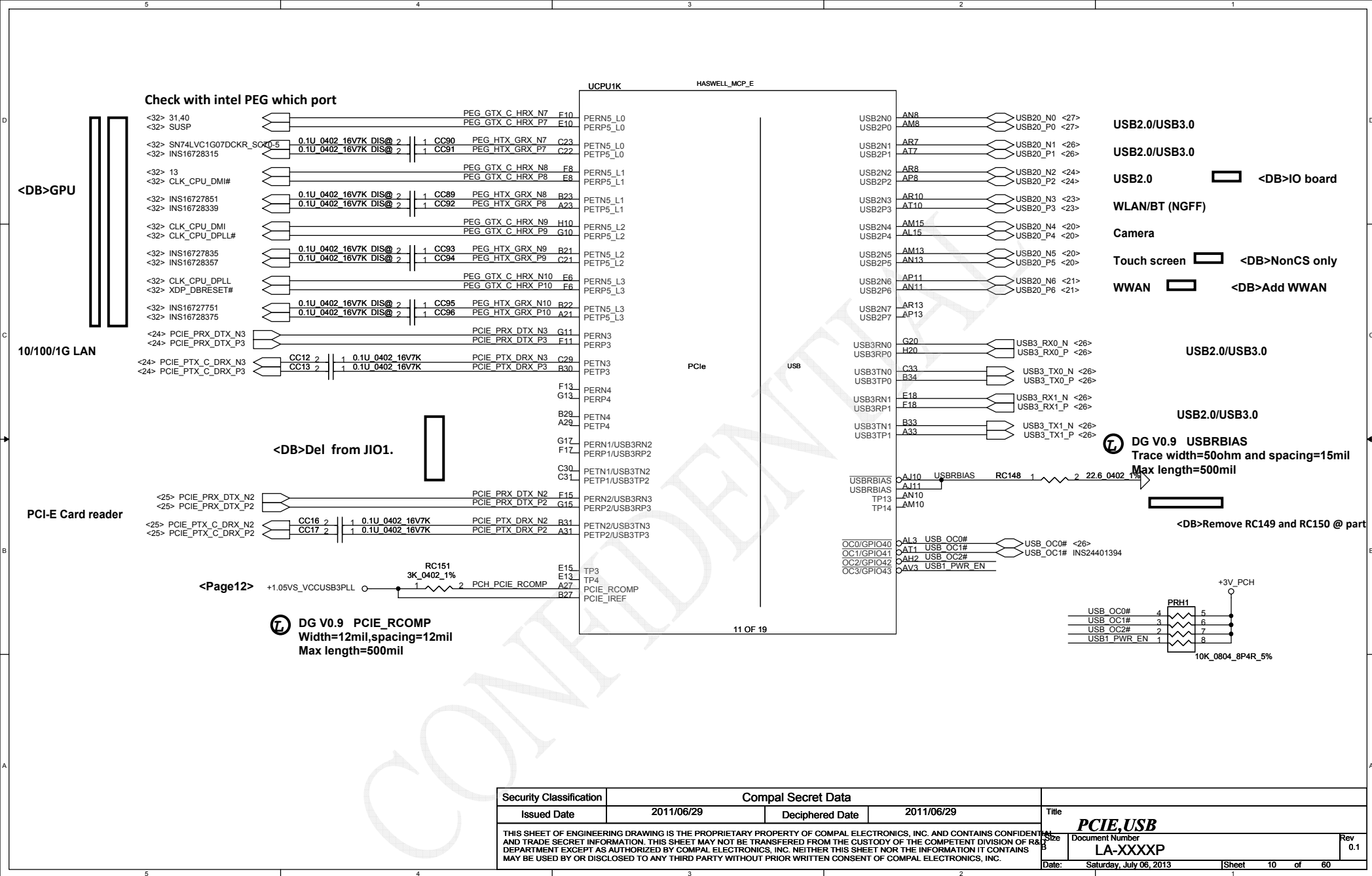
PCH_GPIO86	Boot BIOS Location
0	SPI

9/12 reserve DGPU_PWR_EN on GPIO85

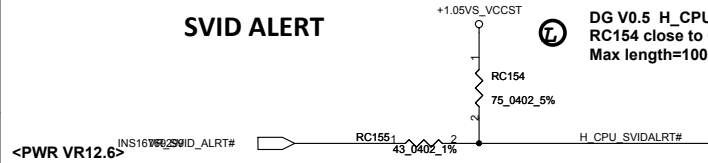
Add WWAN_OFF# on GPIO87



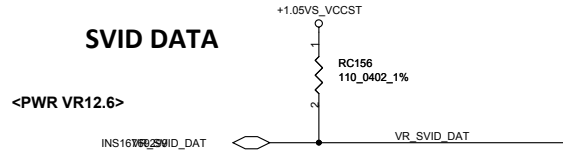
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Issued Date	2011/06/29	Deciphered Date	2011/06/29	GPIO,UART,I2C	
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SVID ALERT

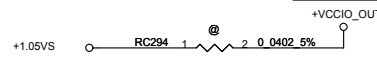


SVID DATA

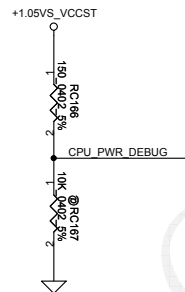


+VCCIO_OUT power rail choose

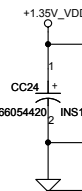
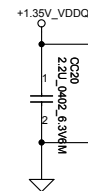
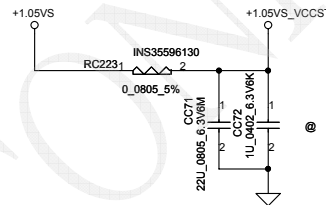
<CPU>



DG V0.5 VIDSOUT
RC156 close to CPU<500mil
Max length=1000~2000mil



<MV>RC223 change to short-R. 4/2



<DB>intel define 470u, ESR12mohm

VCC_SENSE

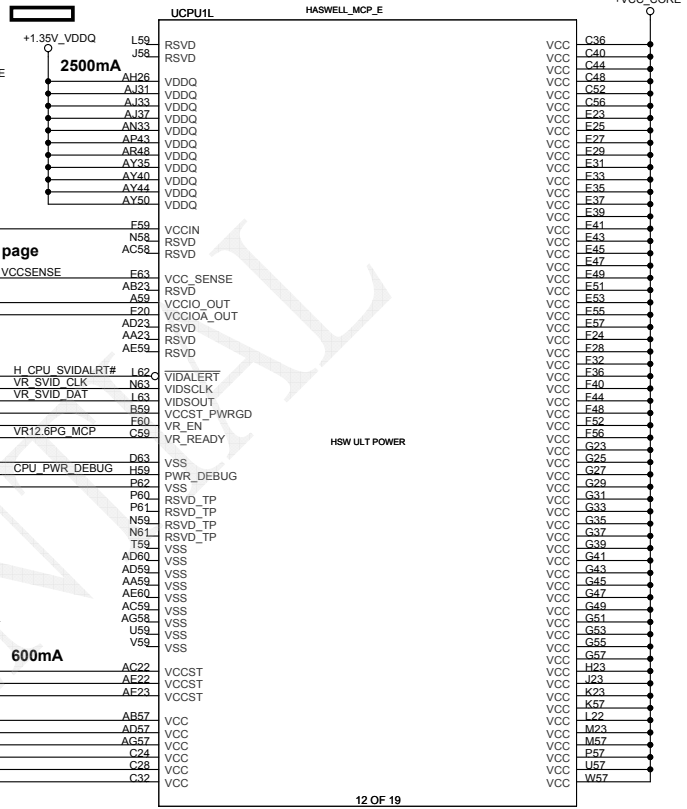
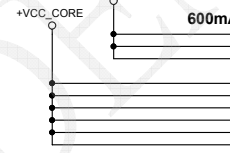
<PWR VR12.6>

<VR IV and CPU>
<EDP_COMP power rail>

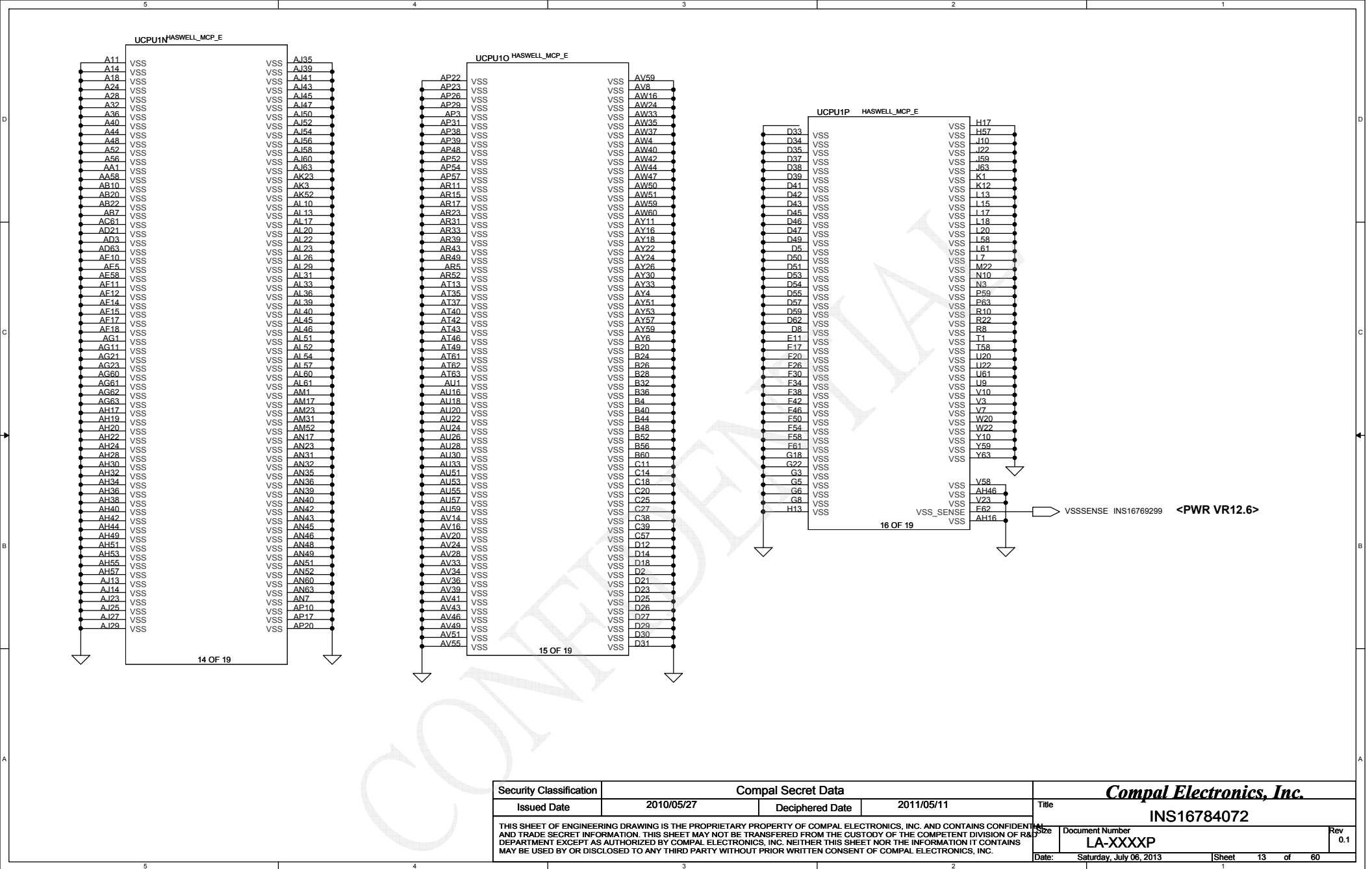
Remove 0ohm RC222

PH on power page

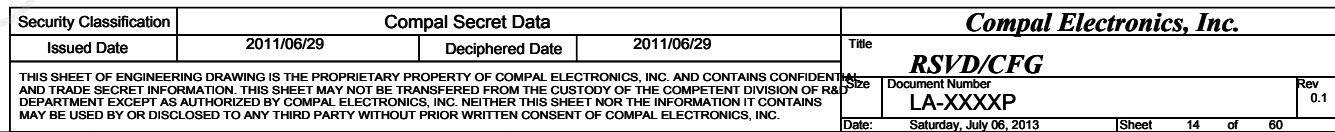
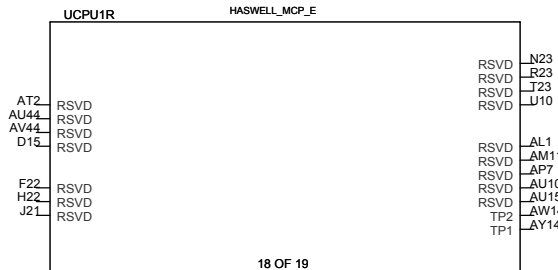
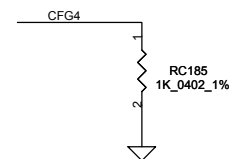
INS161629 SVID_CLK
INS161629 SVID_DAT
INS161629 SVID_PG
INS161629 SVID_ON



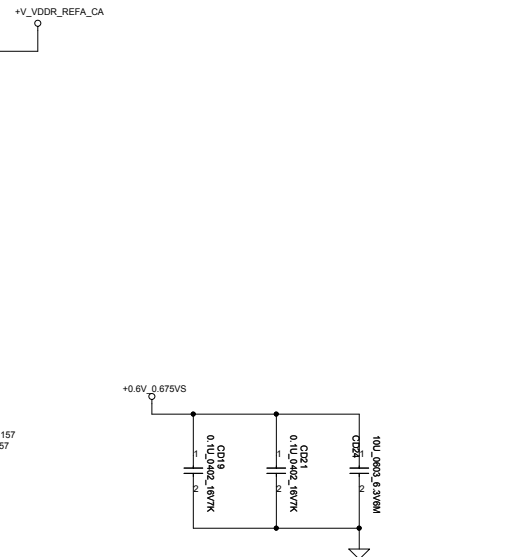
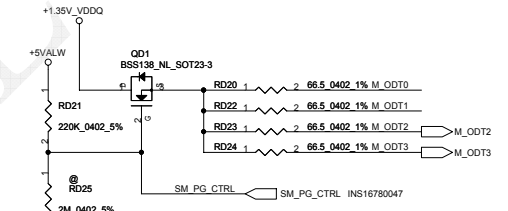
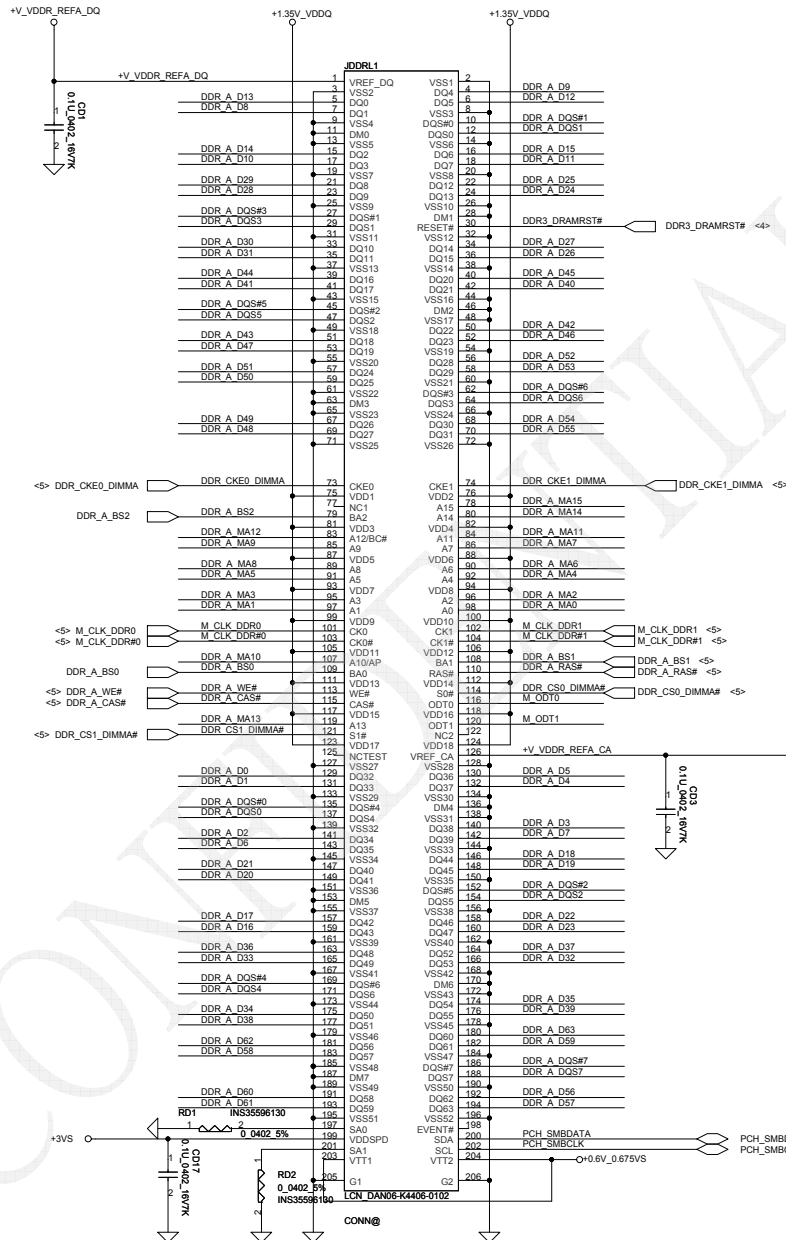
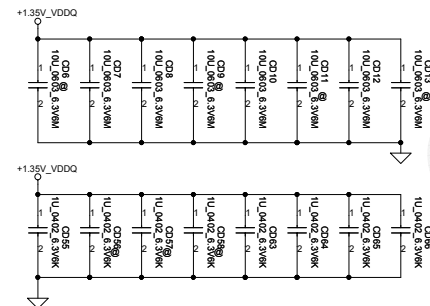
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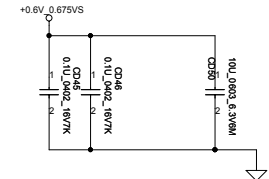
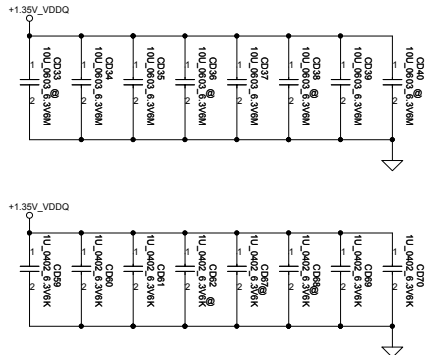
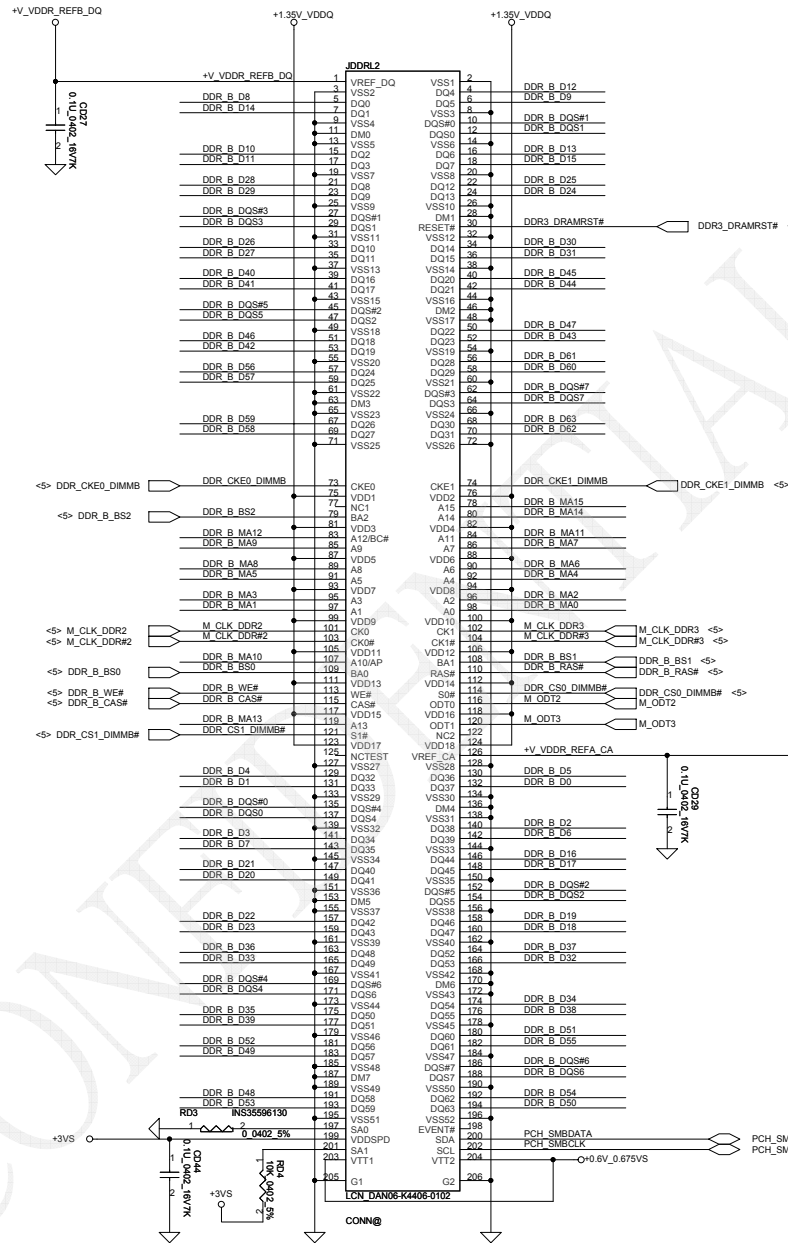


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 <S> DDR_A_DQS[0..7]
 <S> DDR_A_DQS#0..7
 <S> DDR_A_MA[0..15]



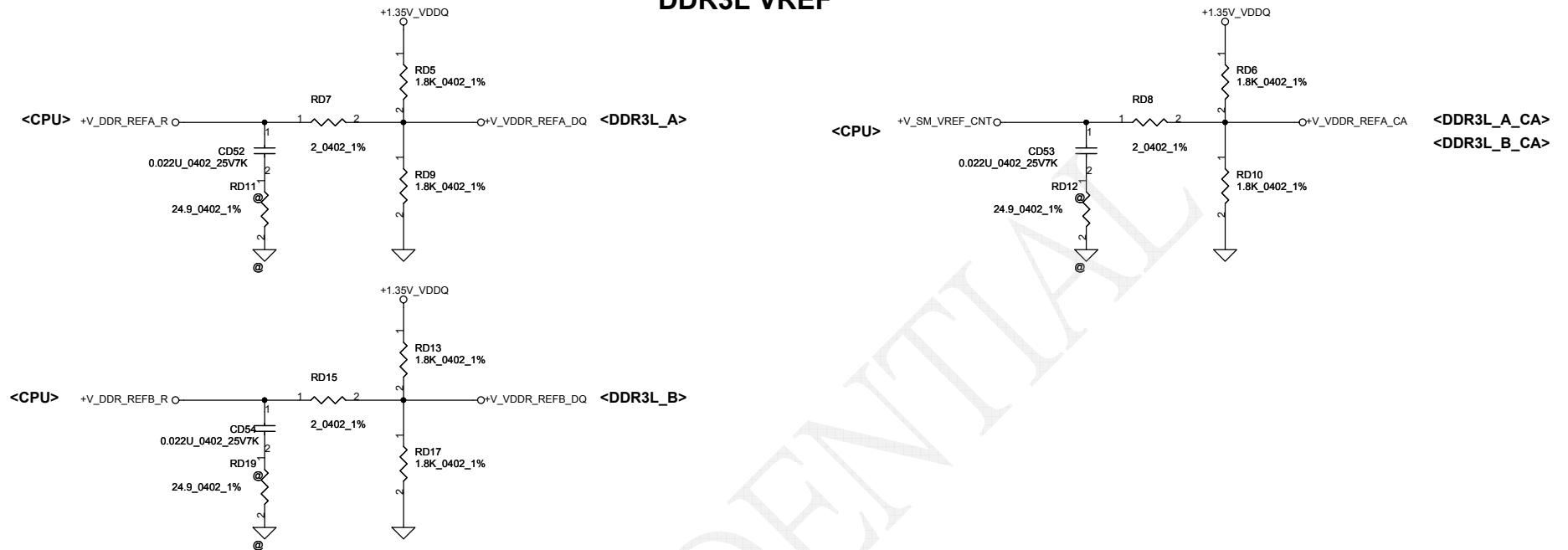
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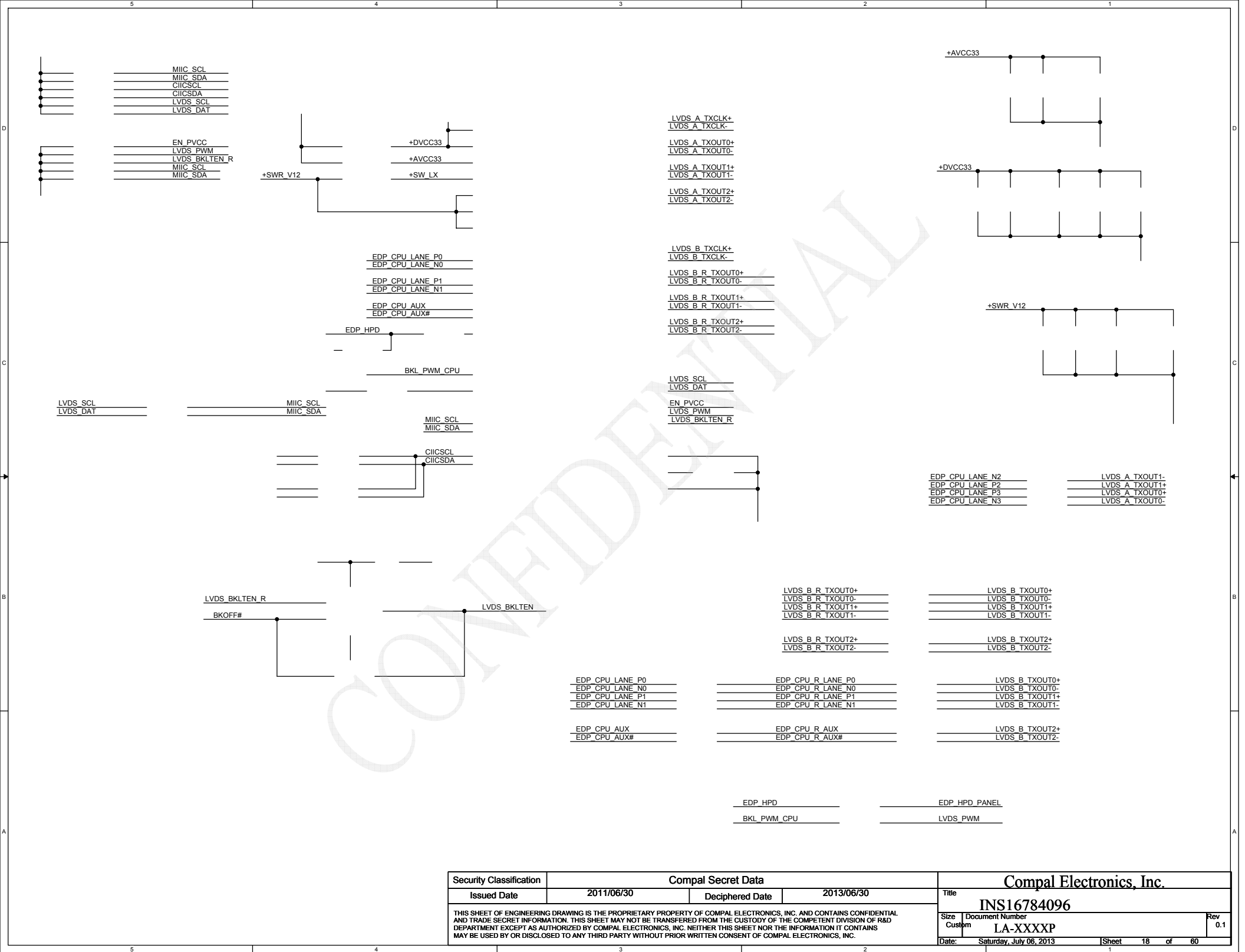


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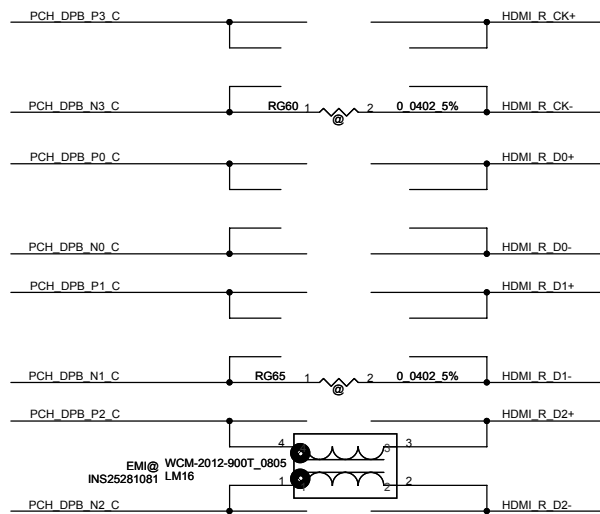
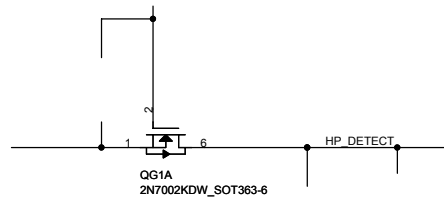
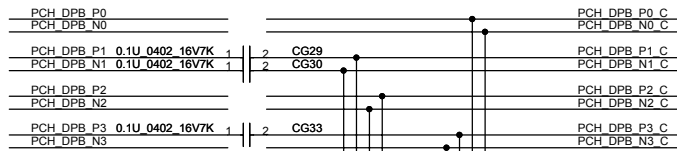
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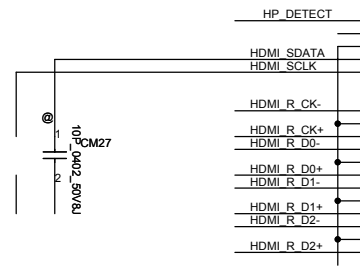
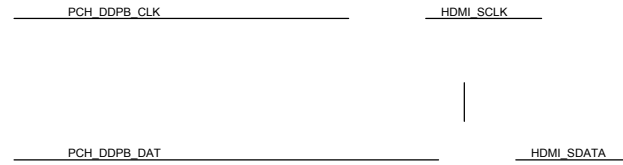
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HDMI_SDATA
HDMI_SCLK
PCH_DDPB_CLK
PCH_DDPB_DAT

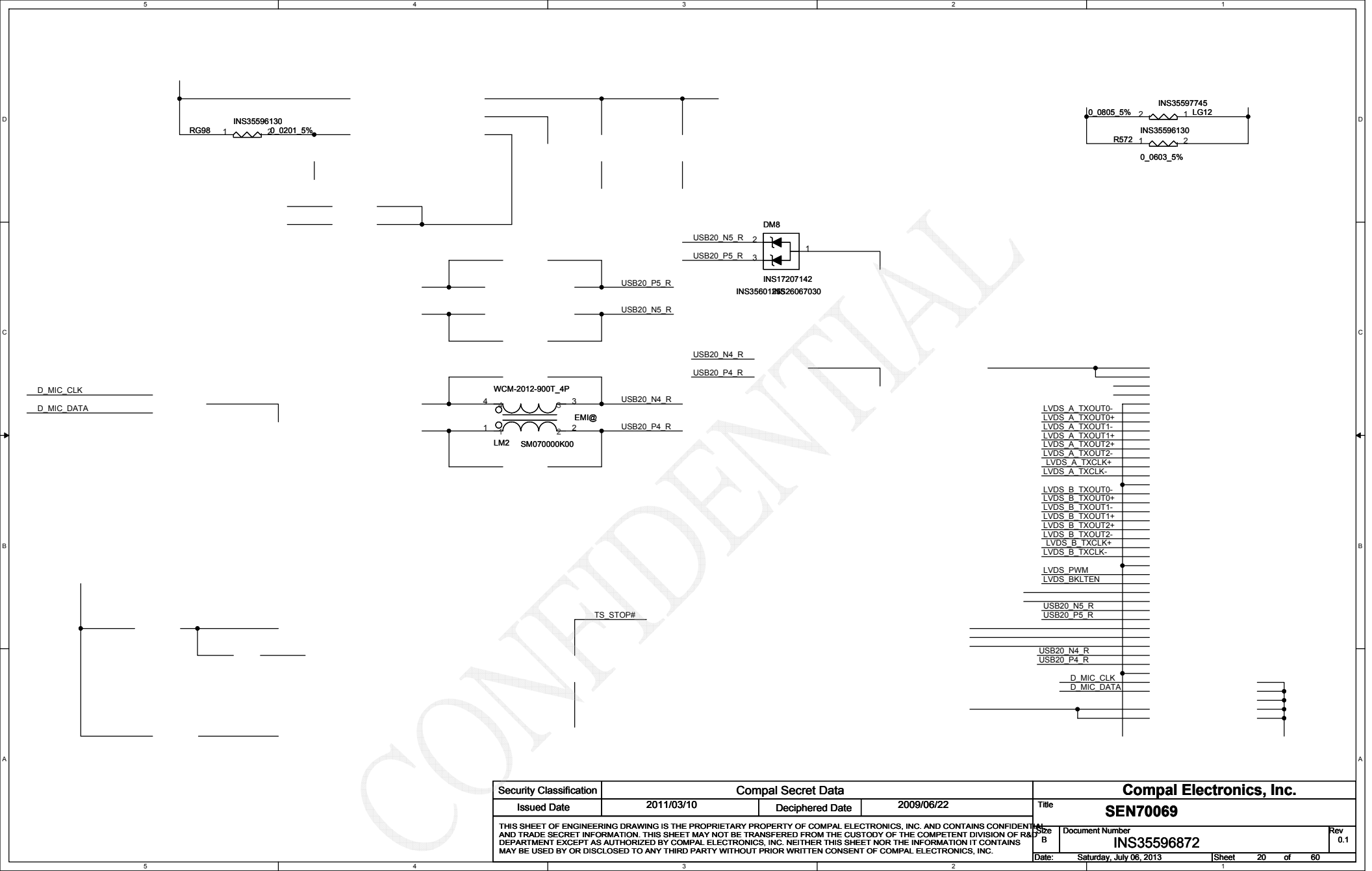


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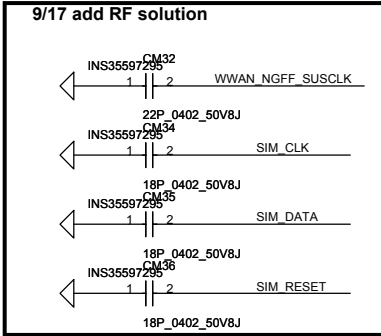
Compal Electronics, Inc.

INS23882255

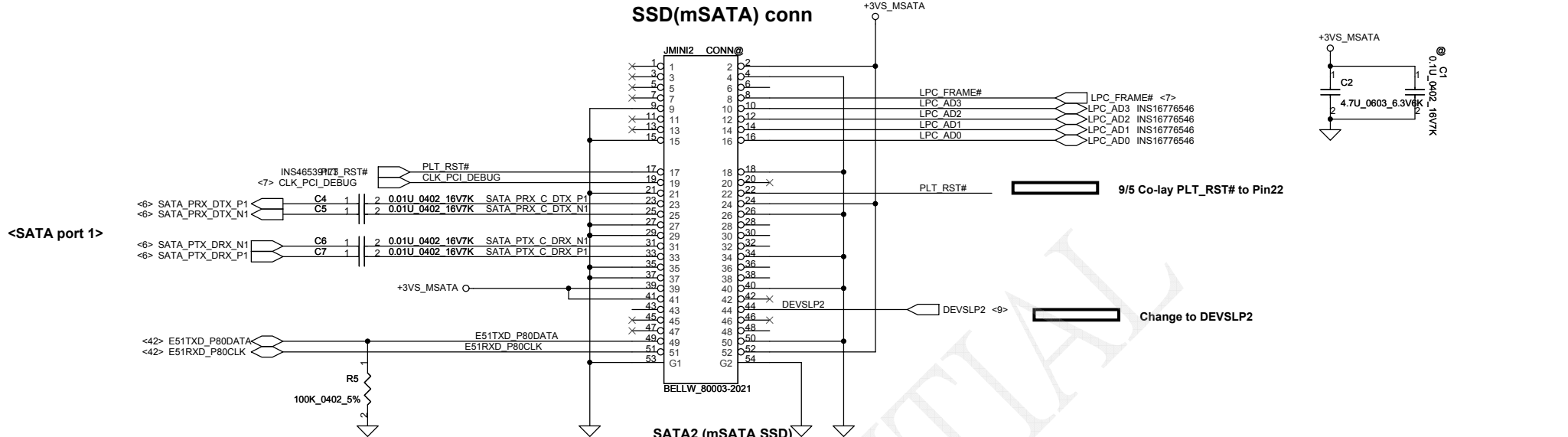
INS35596872



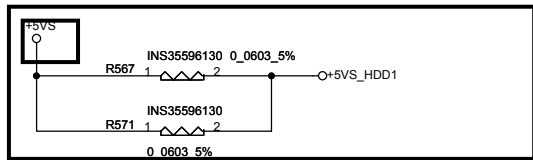
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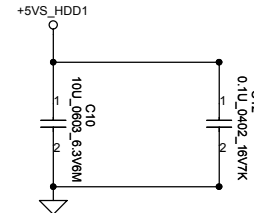
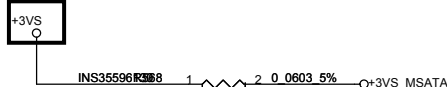
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Issued Date	2011/06/30	Deciphered Date	2013/06/30	Title WWAN NGFF	
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				Rev 0.1	
				Date: Saturday, July 06, 2013	Sheet 21 of 60



9/5 change Q23 +5VALW/+3VALW to +5VS/+3VS



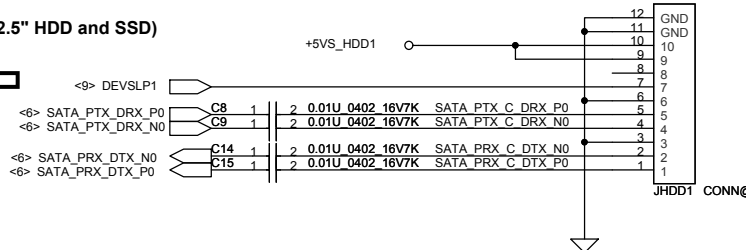
PV# 2013.01.24 Add R572 to support HDD heavy loading current .



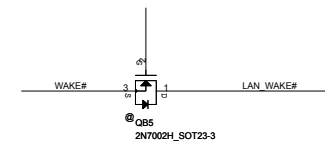
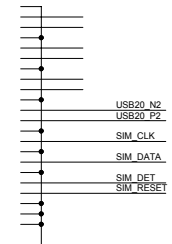
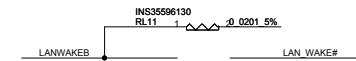
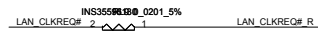
<DB>Change to 10 Pin **2.5" HDD Conn.**

SATA 1 (2.5" HDD and SSD)

<SATA port 0>



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								S CER CAP 10U 10V Z Y5V 0805			
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						B		INS35596872		0.1	
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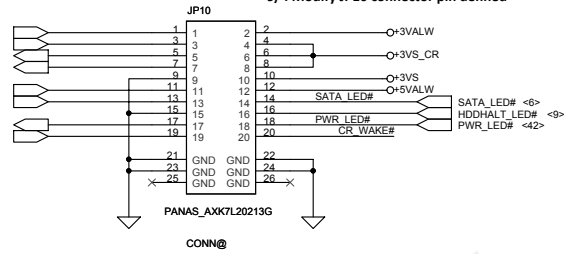
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				Date	Saturday, July 06, 2013
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Card reader conn

9/4 Modify JP10 connector pin defined

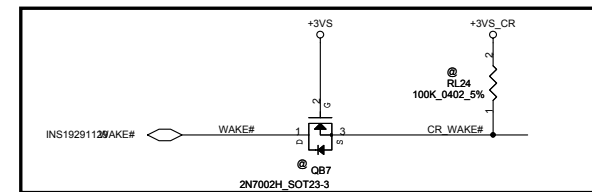
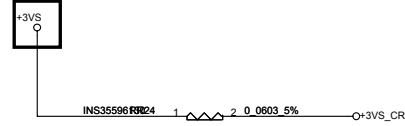
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INS46539181



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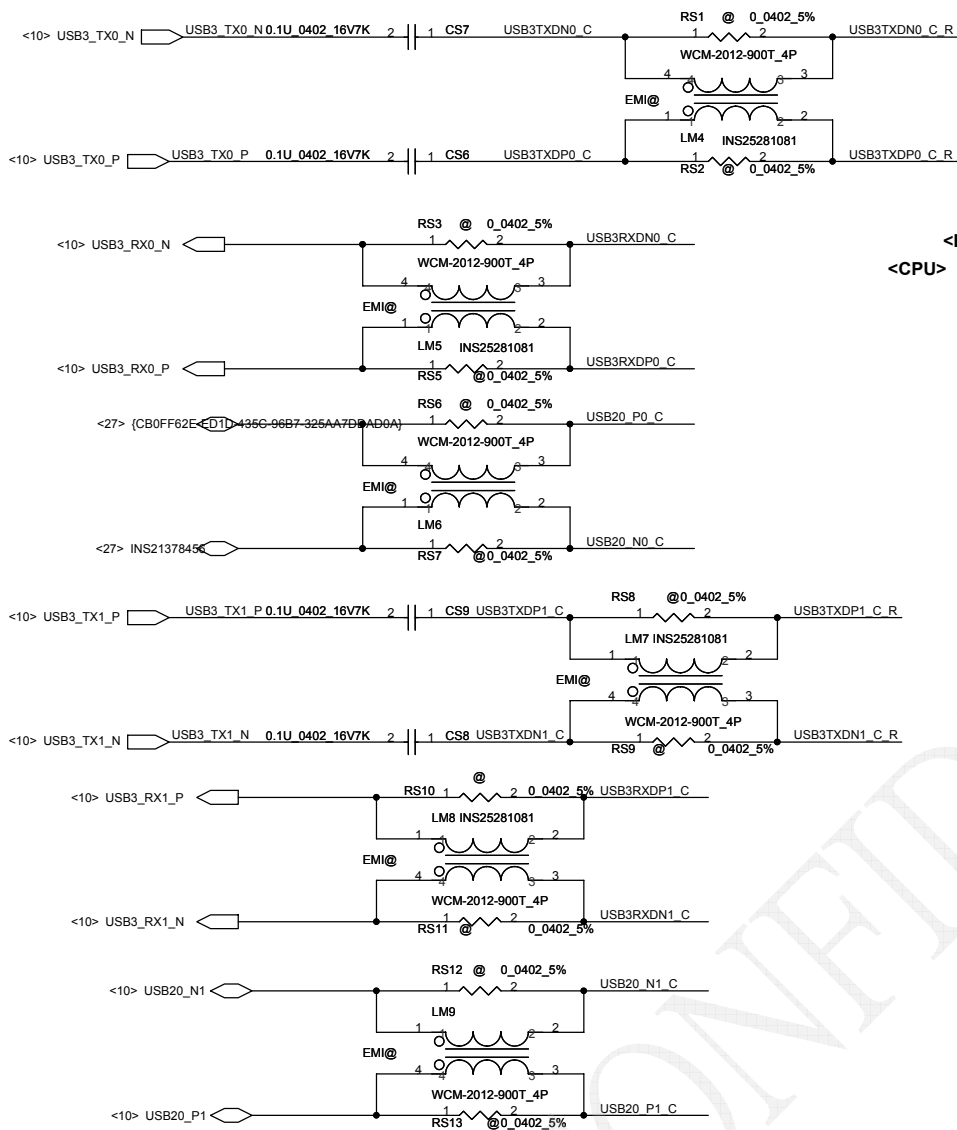
9/13 Change LAN power solution to USB charger power



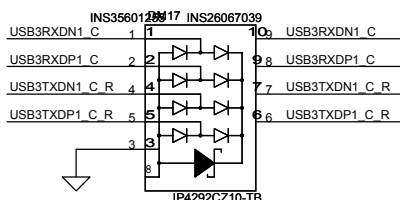
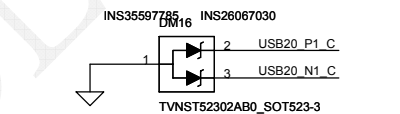
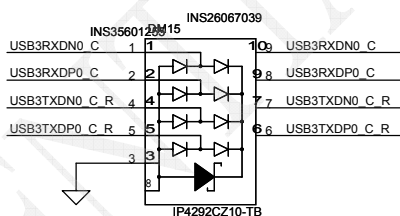
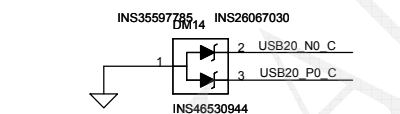
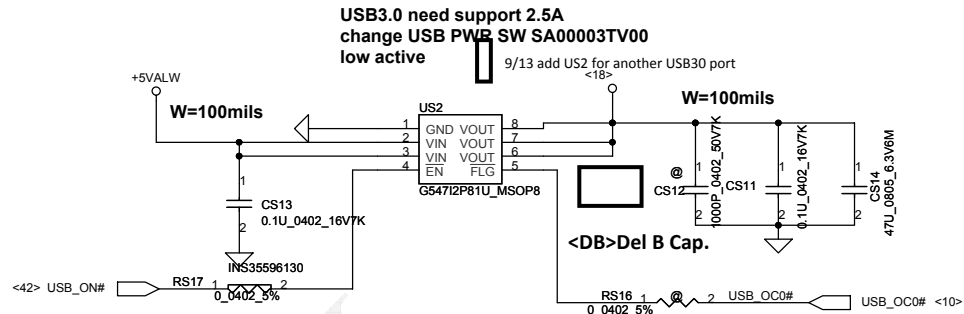
PV# 2013.01.23 Add QB7 abd RL24 to support OBFF

PV# 2013.02.22 Unpop QB4 and RL23 for not support OBFF

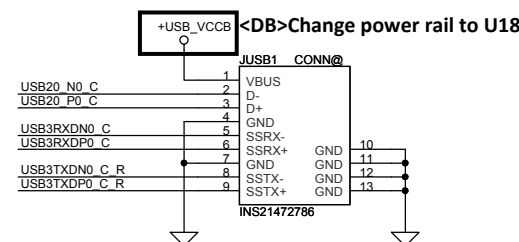
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				Saturday, July 06, 2013				Sheet			
				25				of			
				60							



<EC>
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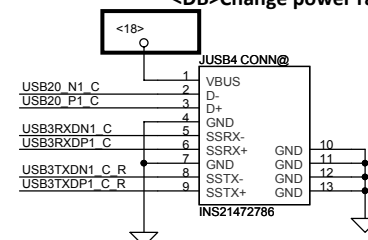


<DB>Update footprint to DC233008M10.
USB2.0/USB3.0 port 1



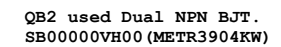
USB2.0/USB3.0 port 2

<DB>Change power rail to U18.



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DB> TPA2012 Change to TPA2011

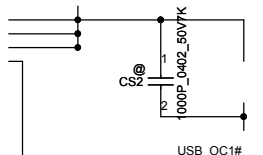
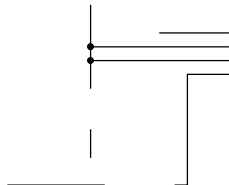
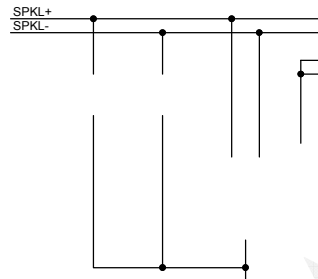
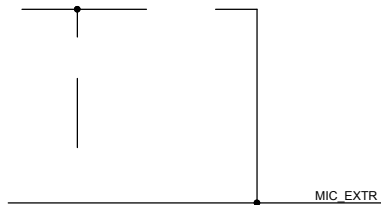


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				B	LA-XXXXP	0.1
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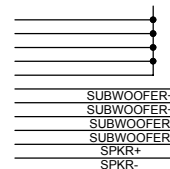
Headphone amplifier

[illegible]

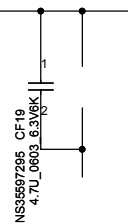
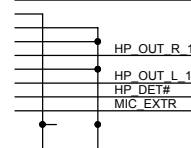
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				B	LA-XXXXP	0.1
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EC LAN ISOLATEB#



EC LAN ISOLATEB#

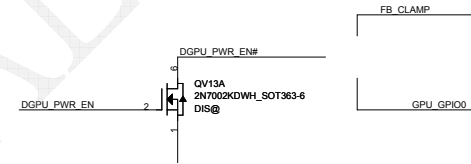
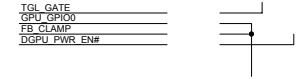
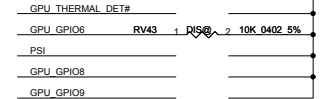
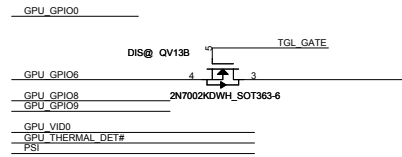
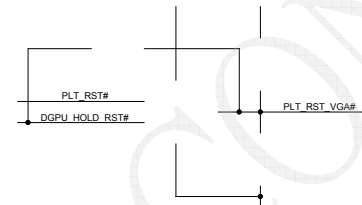


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				Date:	Saturday, July 06, 2013
				Sheet	31 of 60
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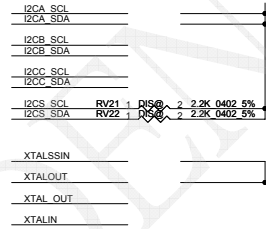
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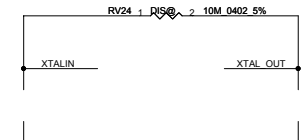
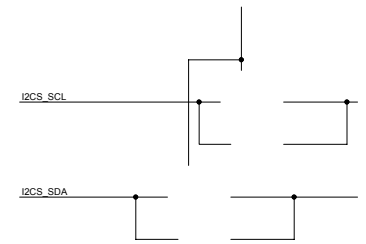
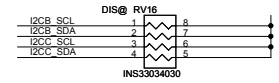
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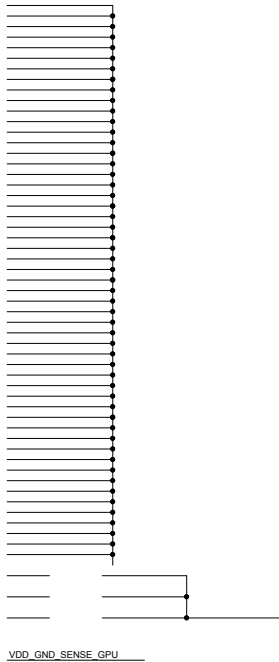


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		Customer	INS35596872	Rev 1.0
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STRAP0
STRAP1
STRAP2
STRAP3
STRAP4

ROM_CS
ROM_SCLK
ROM_SI
ROM_SO

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+1.5VGS_PWR_EN#



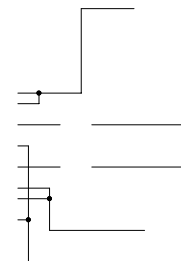
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				Date	Saturday, July 06, 2013
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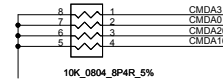
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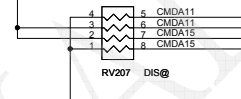
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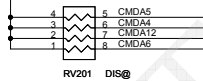
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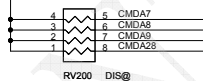
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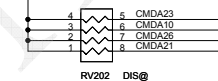
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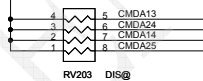
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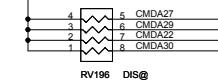
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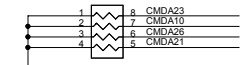
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RV198 DIS@



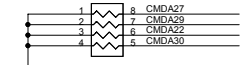
BD82CPMS-QMYY-A1_FCBGA989-D

RV205 DIS@



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RV197 DIS@



BD82CPMS-QMYY-A1_FCBGA989-D

RV206 DIS@



BD82CPMS-QMYY-A1_FCBGA989-D

Security Classification	Compal Secret Data		Compal Electronics, Inc.	
Issued Date	INS16788846	Deciphered Date	WTEPHW1CIS SYMBOL HW RELEASE2002-0628.OLB	Rev 1.0
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			Date	Saturday, July 06, 2013
			Sheet	36 of 60

Memory Partition A RANK 0

Data0~Data31

MDA[0..63] AT24C16AN-10SU-2-7_S08-N
Manufacturer PDS>

Rank 0

Rank 0

Mode E - Mirror Mode Mapping

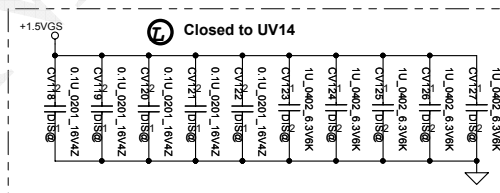
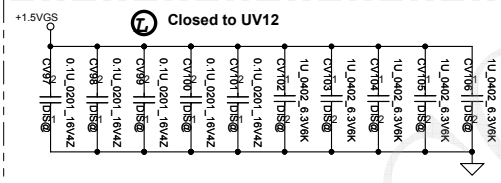
Address	RANK 0		RANK 1	
	0..31	32..63	0..31	32..63
FBx_CMD0	ODT_L		ODT_L	
FBx_CMD1			CS1#_L	
FBx_CMD2	CS0#_L			
FBx_CMD3	CKE_L		CKE_L	
FBx_CMD4	A9	A9	A11	A11
FBx_CMD5	A6	A6	A7	A7
FBx_CMD6	A3	A3	BA1	BA1
FBx_CMD7	A0	A0	A12	A12
FBx_CMD8	A8	A8	A8	A8
FBx_CMD9	A12	A12	A0	A0
FBx_CMD10	A1	A1	A2	A2
FBx_CMD11	RAS#	RAS#	RAS#	RAS#
FBx_CMD12	A13	A13	A14	A14
FBx_CMD13	BA1	BA1	A3	A3
FBx_CMD14	A14	A14	A13	A13
FBx_CMD15	CAS#	CAS#	CAS#	CAS#
FBx_CMD16		ODT_H		ODT_H
FBx_CMD17			CS1#_H	
FBx_CMD18		CS0#_H		
FBx_CMD19		CKE_H		CKE_H
FBx_CMD20	RST	RST	RST	RST
FBx_CMD21	A7	A7	A6	A6
FBx_CMD22	A4	A4	A5	A5
FBx_CMD23	A11	A11	A9	A9
FBx_CMD24	A2	A2	A1	A1
FBx_CMD25	A10	A10	WE#	WE#
FBx_CMD26	A5	A5	A4	A4
FBx_CMD27	BA2	BA2		
FBx_CMD28	WE#	WE#	A10	A10
FBx_CMD29	BA0	BA0	BA0	BA0
FBx_CMD30			BA2	BA2

Group 1

Group 0

Group 2

Group 3

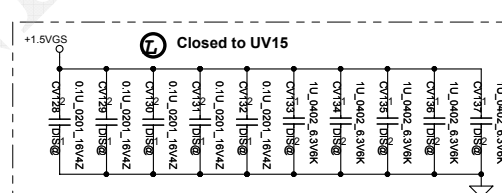
L:Group 1
H:Group 2L:Group 0
H:Group 3

Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	INS16788846	Deciphered Date	WTPEHW1/CIS SYMBOL HW RELEASE 2002-0628.OLB	Customer Document Number	INS47268597
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Date: Saturday, July 06, 2013				Rev 1.0	INS35596872

MDA[0..63] MAX14566EETA+_TDFN-EP8_2X2
Manufacturer Pxxxx>



	RANK 0		RANK 1	
Address	0..31	32..63	0..31	32..63
FbX_CMD0	ODT_L		ODT_L	
FbX_CMD1			CS1#_L	
FbX_CMD2	CS0#_L			
FbX_CMD3	CKE_L		CKE_L	
FbX_CMD4	A9	A9	A11	A11
FbX_CMD5	A6	A6	A7	A7
FbX_CMD6	A3	A3	BA1	BA1
FbX_CMD7	A0	A0	A12	A12
FbX_CMD8	A8	A8	A8	A8
FbX_CMD9	A12	A12	A0	A0
FbX_CMD10	A1	A1	A2	A2
FbX_CMD11	RAS#	RAS#	RAS#	RAS#
FbX_CMD12	A13	A13	A14	A14
FbX_CMD13	BA1	BA1	A3	A3
FbX_CMD14	A14	A14	A13	A13
FbX_CMD15	CAS#	CAS#	CAS#	CAS#
FbX_CMD16		ODT_H		ODT_H
FbX_CMD17				CS1#
FbX_CMD18		CS0#_H		
FbX_CMD19		CKE_H		CKE_H
FbX_CMD20	RST	RST	RST	RST
FbX_CMD21	A7	A7	A6	A6
FbX_CMD22	A4	A4	A5	A5
FbX_CMD23	A11	A11	A9	A9
FbX_CMD24	A2	A2	A1	A1
FbX_CMD25	A10	A10	WE#	WE#
FbX_CMD26	A5	A5	A4	A4
FbX_CMD27	BA2	BA2		
FbX_CMD28	WE#	WE#	A10	A10
FbX_CMD29	BA0	BA0	BA0	BA0
FbX_CMD30			BA2	BA2



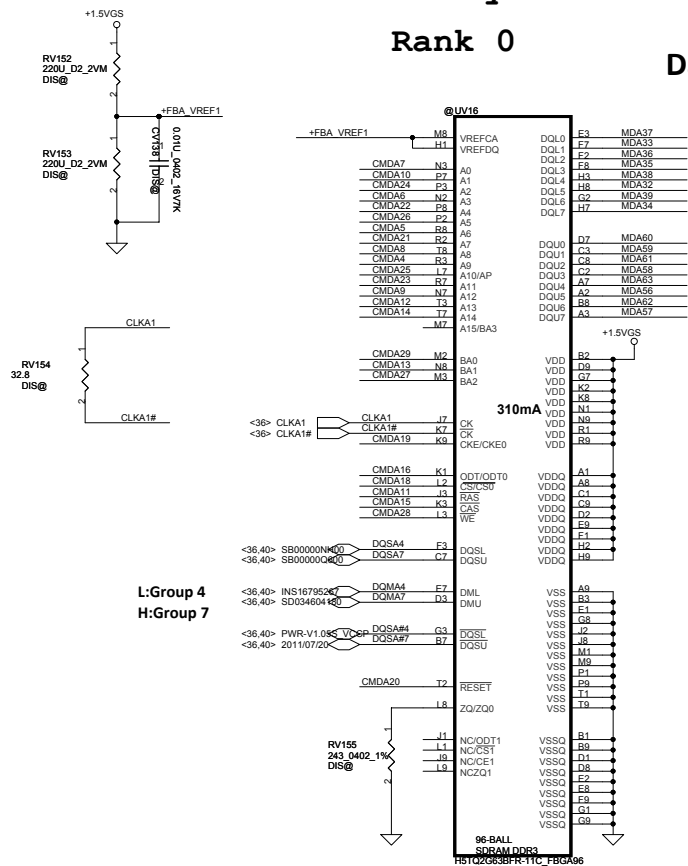
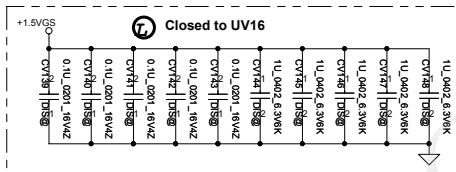
Security Classification	Compal Secret Data			Compal Electronics, Inc.		
Issued Date	INS16788846	Deciphered Date	\\TPEHW\\1\\CIS SYMBOL\\HW\\RELEASE2002-0628.OLB	INS47268605	Document Number	Rev 1.0
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				INS35596872		
Date				Saturday, July 06, 2013		Sheet 38 of 60

Memory Partition A RANK 0 32 bits

Rank 0

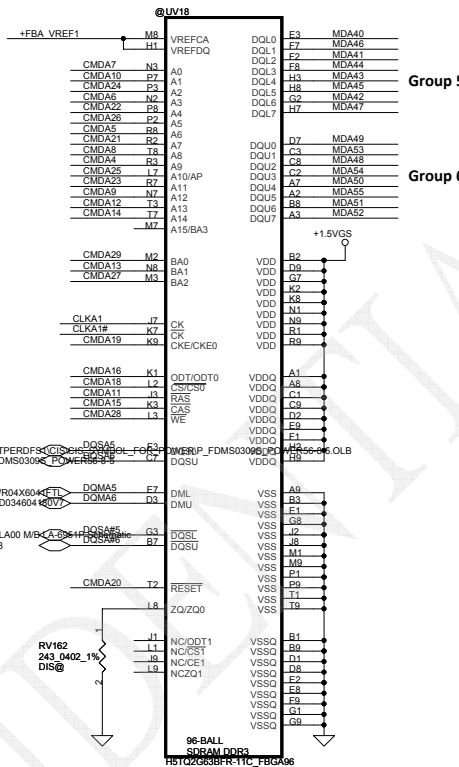
Data32~Data63

Rank 0

MDA[0..63] INS23313965
Manufacturer P496>L:Group 4
H:Group 7

Group 4

Group 7

L:Group 5
H:Group 6

Group 5

Group 6

Mode E - Mirror Mode Mapping

Address	RANK 0		RANK 1	
	0..31	32..63	0..31	32..63
FBx_CMD0	ODT_L		ODT_L	
FBx_CMD1			CSI#_L	
FBx_CMD2	CS0#_L			
FBx_CMD3	CKE_L		CKE_L	
FBx_CMD4	A9	A9	A11	A11
FBx_CMD5	A6	A6	A7	A7
FBx_CMD6	A3	A3	BA1	BA1
FBx_CMD7	A0	A0	A12	A12
FBx_CMD8	A8	A8	A8	A8
FBx_CMD9	A12	A12	A0	A0
FBx_CMD10	A1	A1	A2	A2
FBx_CMD11	RAS#	RAS#	RAS#	RAS#
FBx_CMD12	A13	A13	A14	A14
FBx_CMD13	BA1	BA1	A3	A3
FBx_CMD14	A14	A14	A13	A13
FBx_CMD15	CAS#	CAS#	CAS#	CAS#
FBx_CMD16		ODT_H		ODT_H
FBx_CMD17			CSI#_H	
FBx_CMD18		CS0#_H		
FBx_CMD19		CKE_H		CKE_H
FBx_CMD20	RST	RST	RST	RST
FBx_CMD21	A7	A7	A6	A6
FBx_CMD22	A4	A4	A5	A5
FBx_CMD23	A11	A11	A9	A9
FBx_CMD24	A2	A2	A1	A1
FBx_CMD25	A10	A10	WE#	WE#
FBx_CMD26	A5	A5	A4	A4
FBx_CMD27	BA2	BA2		
FBx_CMD28	WE#	WE#	A10	A10
FBx_CMD29	BA0	BA0	BA0	BA0
FBx_CMD30			BA2	BA2

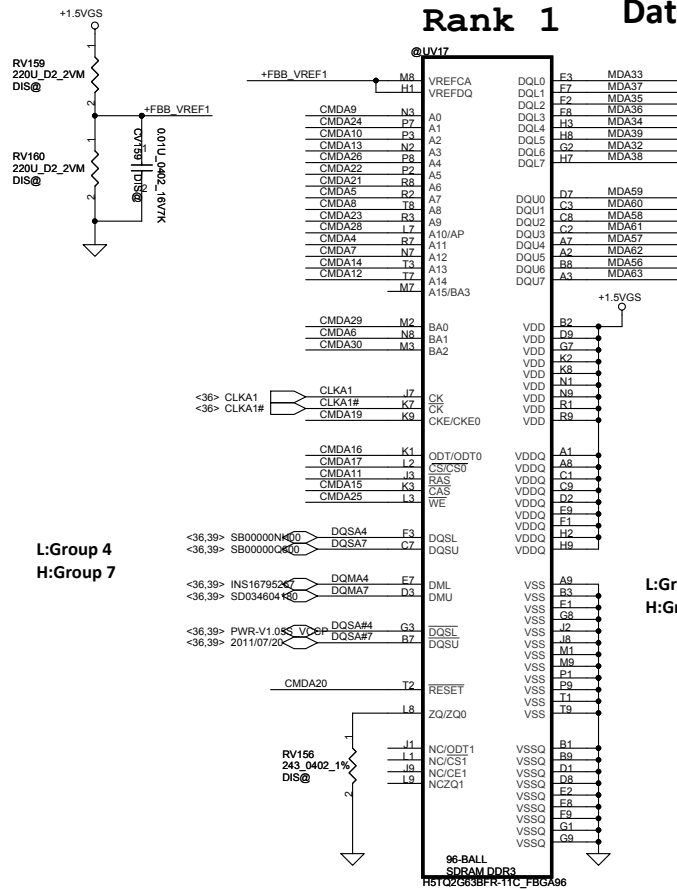
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Issued Date	INS16788846	Deciphered Date	2002-06-28	
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Date:	Saturday, July 06, 2013	Sheet	39	of 60

Memory Partition A RANK 1 32 bits

Rank 1 Data32~Data63

Rank 1

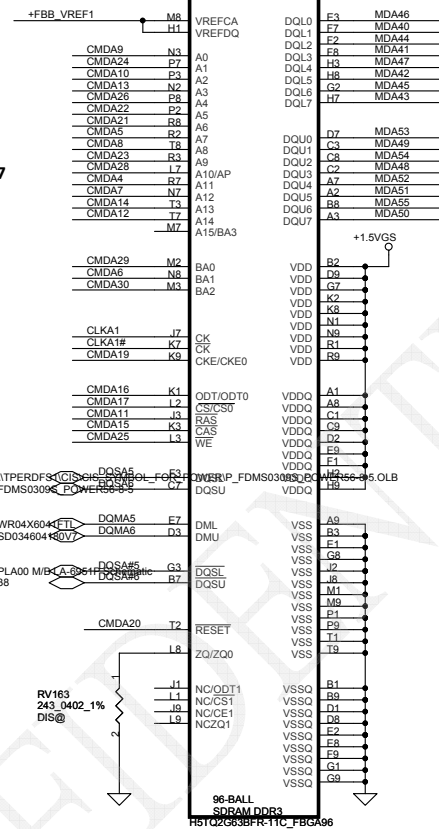
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Manufacturer P086



Group 4

Group 7

L:Group 5
H:Group 6

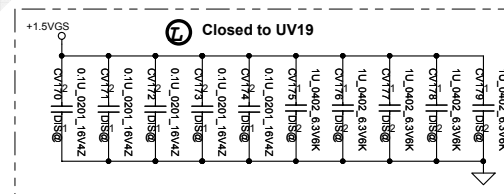
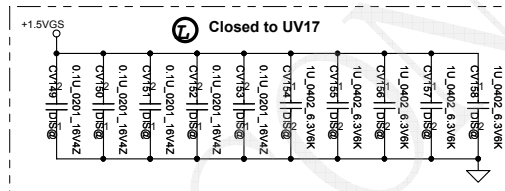


Group 5

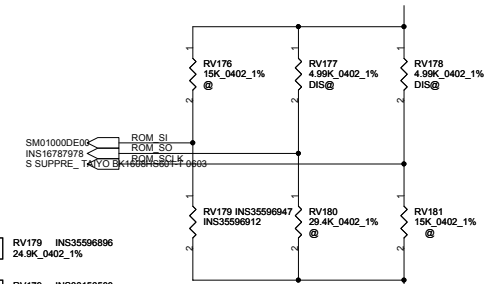
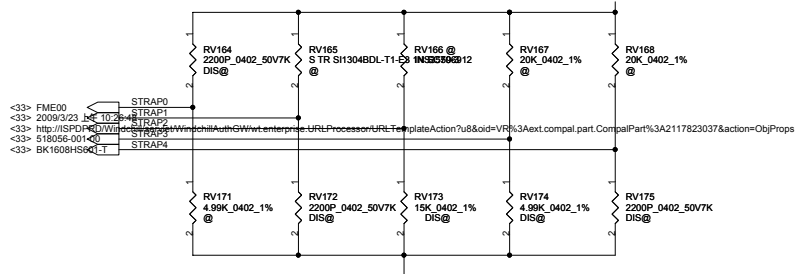
Group 6

Mode E - Mirror Mode Mapping

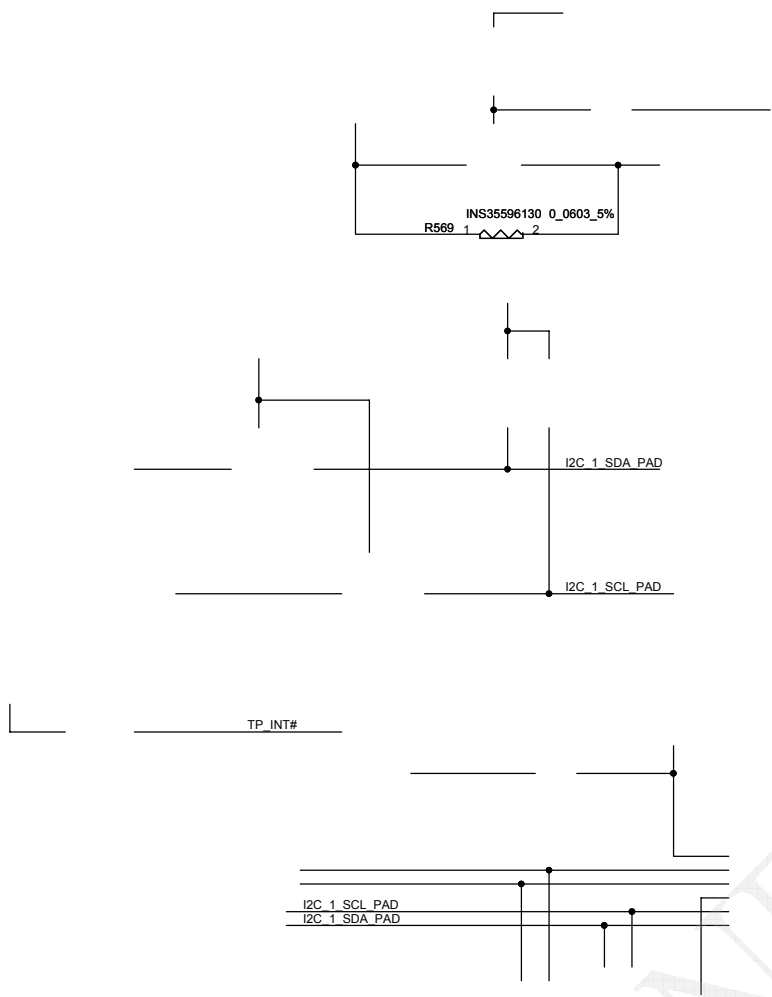
	RANK 0		RANK 1	
Address	0..31	32..63	0..31	32..63
FBx_CMD0	ODT_L		ODT_L	
FBx_CMD1			CS1#_L	
FBx_CMD2	CS0#_L			
FBx_CMD3	CKE_L		CKE_L	
FBx_CMD4	A9	A9	A11	A11
FBx_CMD5	A6	A6	A7	A7
FBx_CMD6	A3	A3	BA1	BA1
FBx_CMD7	A0	A0	A12	A12
FBx_CMD8	A8	A8	A8	A8
FBx_CMD9	A12	A12	A0	A0
FBx_CMD10	A1	A1	A2	A2
FBx_CMD11	RAS#	RAS#	RAS#	RAS#
FBx_CMD12	A13	A13	A14	A14
FBx_CMD13	BA1	BA1	A3	A3
FBx_CMD14	A14	A14	A13	A13
FBx_CMD15	CAS#	CAS#	CAS#	CAS#
FBx_CMD16		ODT_H	ODT_H	
FBx_CMD17			CS1#_H	
FBx_CMD18		CS0#_H		
FBx_CMD19		CKE_H		CKE_H
FBx_CMD20	RST	RST	RST	RST
FBx_CMD21	A7	A7	A6	A6
FBx_CMD22	A4	A4	A5	A5
FBx_CMD23	A11	A11	A9	A9
FBx_CMD24	A2	A2	A1	A1
FBx_CMD25	A10	A10	WE#	WE#
FBx_CMD26	A5	A5	A4	A4
FBx_CMD27	BA2	BA2		
FBx_CMD28	WE#	WE#	A10	A10
FBx_CMD29	BA0	BA0	BA0	BA0
FBx_CMD30			BA2	BA2



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Date:	Saturday, July 06, 2013	Sheet	40	of	60



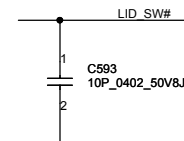
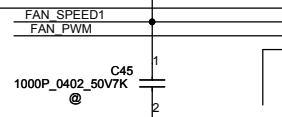
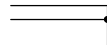
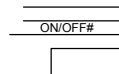
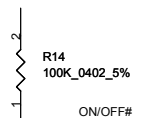
Security Classification	Compal Secret Data		Compal Electronics, Inc.	
Issued Date	INS16788846	Deciphered Date	WTPHEHW1CIS SYMBOL HW RELEASE2002-0628.OLB	Rev 1.0
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Date:	Saturday, July 06, 2013	Sheet	41	of 60



KSI7			
KSI6			
KSI5			
KSI4			
KSI3			
KSI2			
KSI1			
KSI0			
KSO17			
KSO16			
KSO15			
KSO14			
KSO13			
KSO12			
KSO11			
KSO10			
KSO9			
KSO8			
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KSO1			
KSO0			
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KSI6	3		
KSI2	4		
KSI4	5		
KSI5	6		
KSO0	7		
KSI2	8		
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KSO5	10		
KSO1	11		
KSI0	12		
KSO2	13		
KSO4	14		
KSO7	15		
KSO8	16		
KSO6	17		
KSO3	18		
KSO12	19		
KSO13	20		
KSO14	21		
KSO11	22		
KSO10	23		
KSO15	24		
KSO16	25		
KSO17	26		
WL WHIT	27		
WLAN AMBER	28		
MUTE LED	29		
	30		
	31		
	32		
		33	
		34	

ACES_51503-03241-001

Security Classification	Compal Secret Data			Compal Electronics, Inc.		
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				Date:	Saturday, July 06, 2013	Sheet 43 of 60

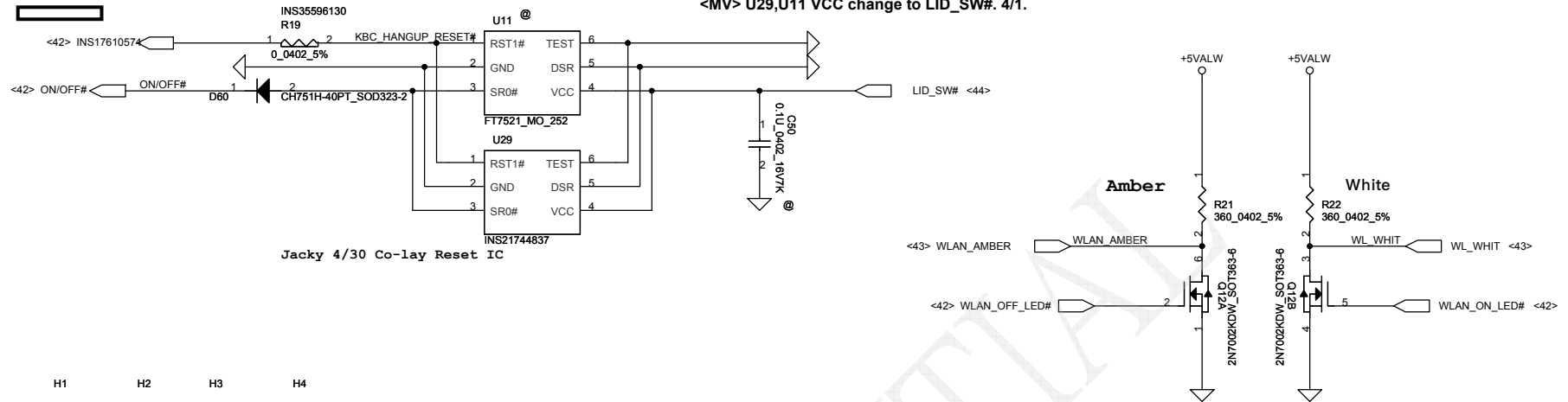


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Issued Date	2009/04/07	Deciphered Date	2012/10/21	Title	11,13,22,27
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				Date: Saturday, July 06, 2013	Rev 0.1
				Sheet 44 of 60	

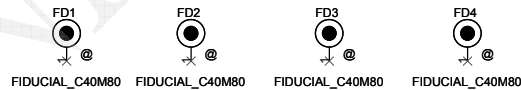
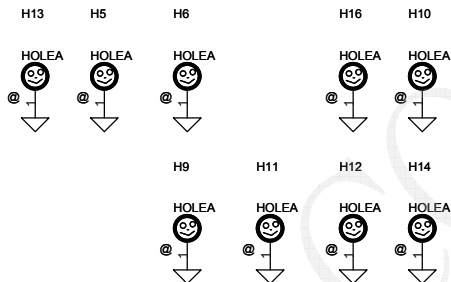
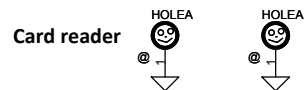
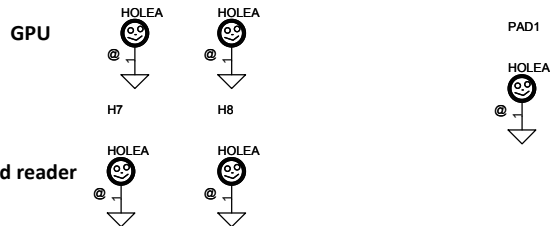
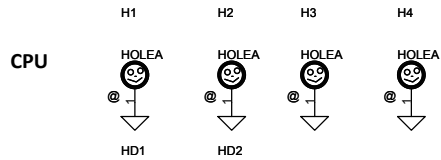
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<MV> RST1# change to EC_RST#,4/10

Reset IC

<MV> U29,U11 VCC change to LID_SW#. 4/1.



Jacky 4/30 Co-lay Reset IC



PCB

ZZZ3

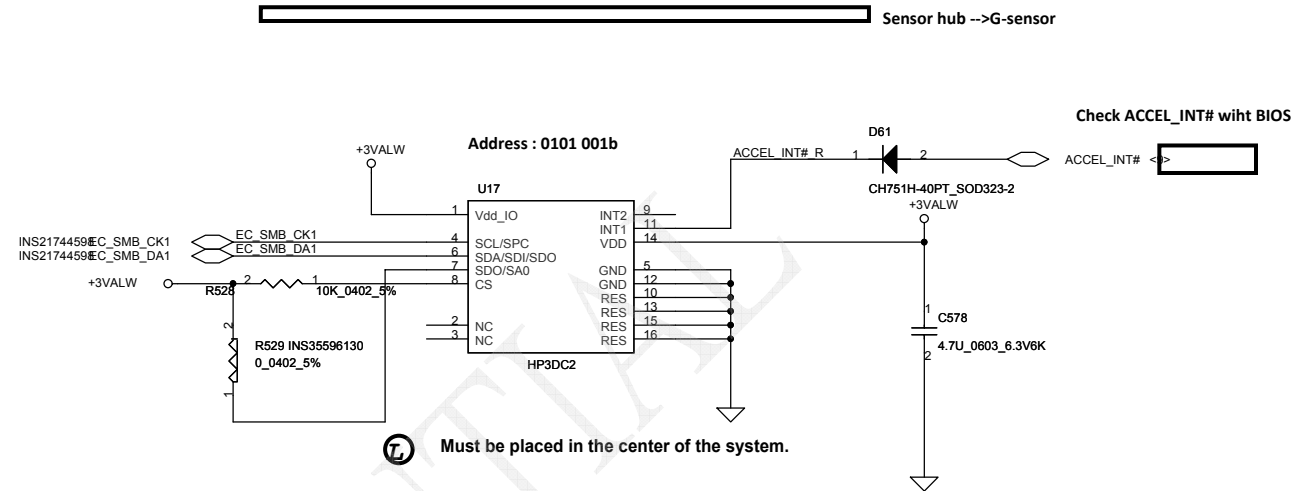
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INS35596872

INS47267858

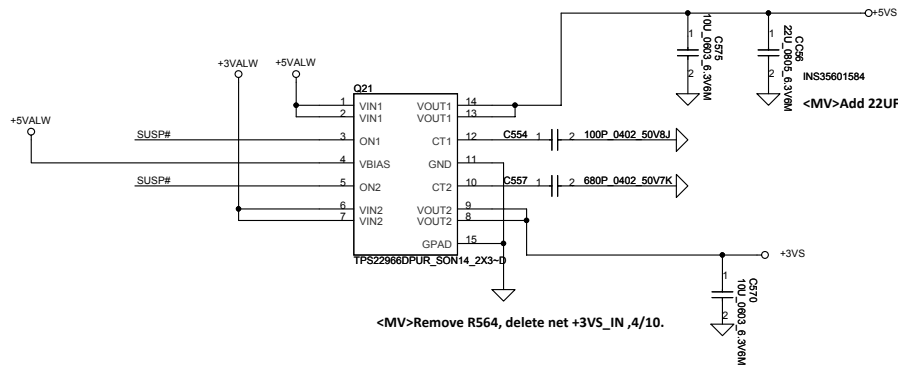
Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2006/09/25	Deciphered Date	2006/09/25	Title	E:\W720K8\DESIGN CIRCUIT\963L.C
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				Date	Saturday, July 06, 2013
				Sheet	45 of 60

ACCELEROMETER



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Issued Date		2011/06/30		Deciphered Date		2013/06/30		Title		
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								Size	Document Number	Rev
								B	LA-XXXXP	0.1
								Date:	Saturday, July 06, 2013	Sheet 46 of 60

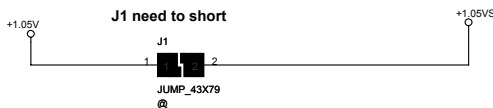
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<MV>Add 22UF for RF suggestion ,4/10.

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+1.05V TO +1.05VS

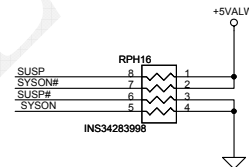
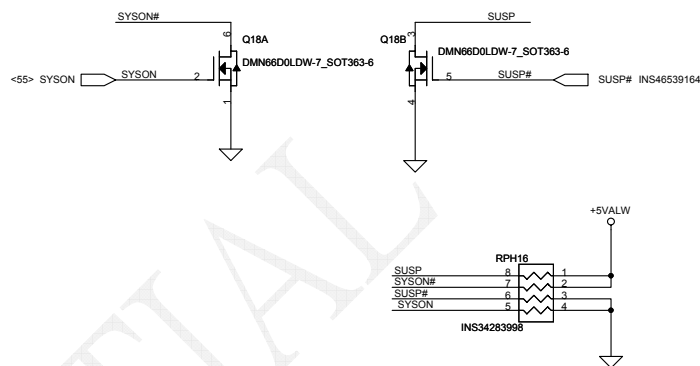
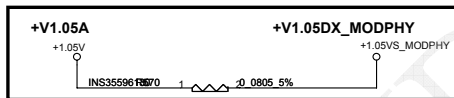


AO4430L
VGS Max=+/- 20V
VGS(Th) max=2.5V

Rds Max=5.5m @VGS=10V
Rds Max=7.5m @VGS=4.5V

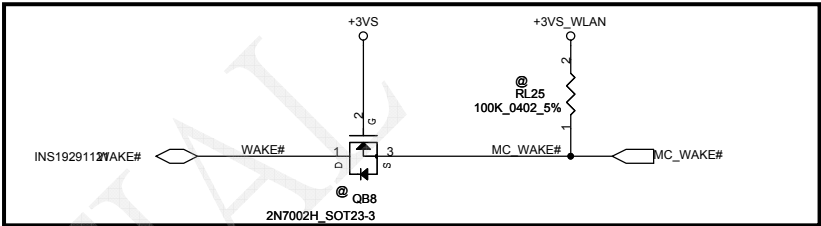
CPU +V1.05DX_MODPHY
Max Rdson <6m ohm
1840mA

AO4430L
VGS Max=+/- 20V
VGS(Th) max=2.5V
Rds Max=5.5m @VGS=10V
Rds Max=7.5m @VGS=4.5V



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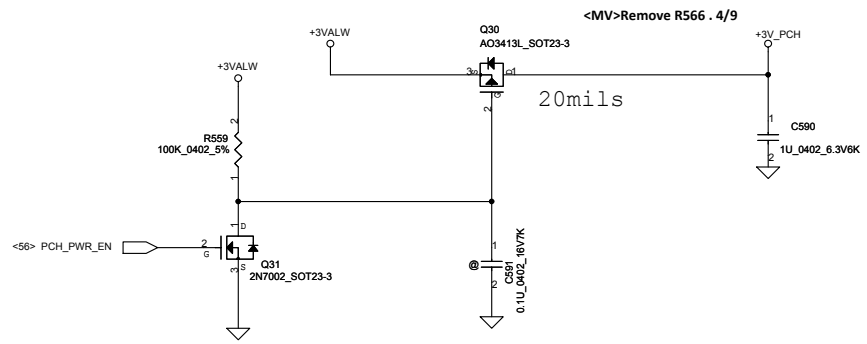
NGFF and WLAN



PV# 2013.01.23 Add QB8 abd RL25 to support OBFF

PV# 2013.02.22 Unpop QB4 and RL23 for not support OBFF

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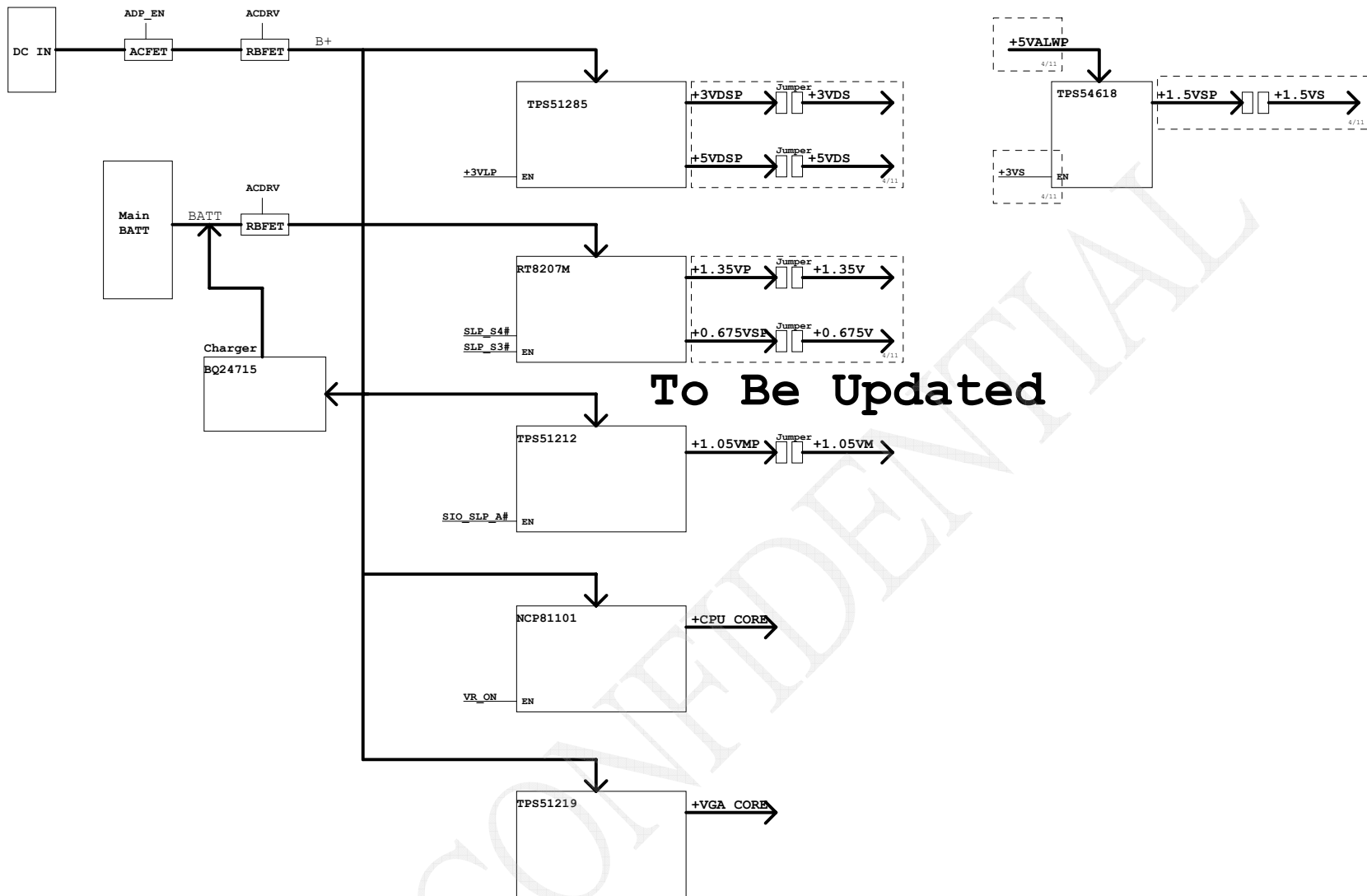


<DB>NonCS no +1.8VS and low switch-->PMOS

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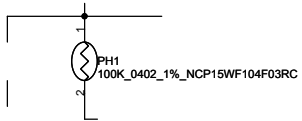
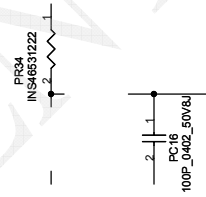
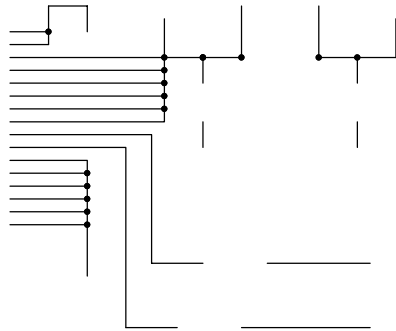
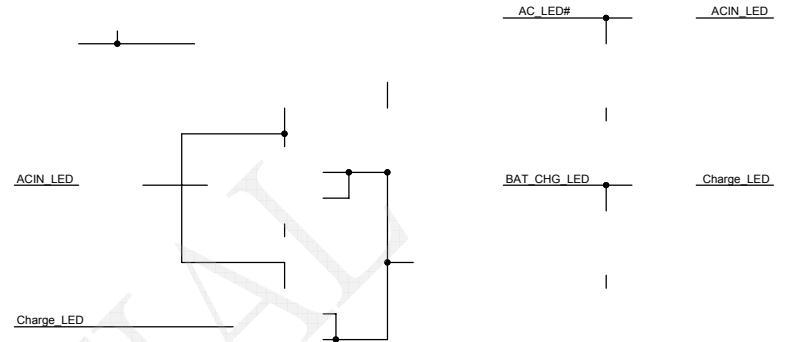
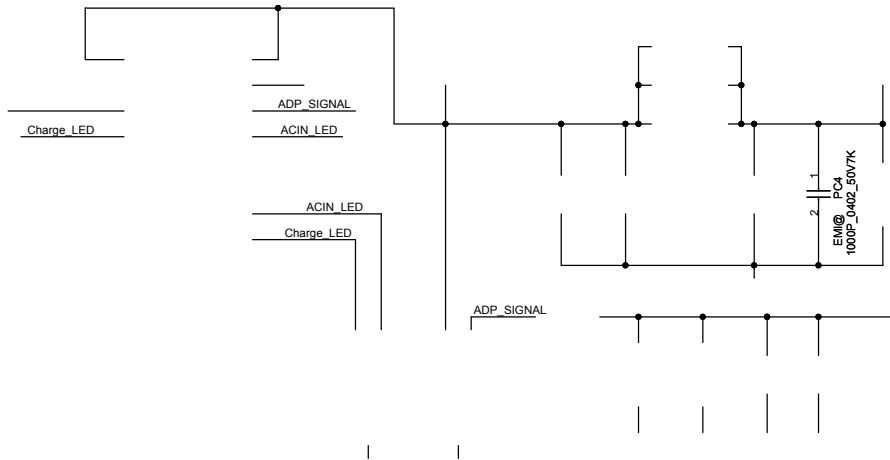
Headphone and Mic conn

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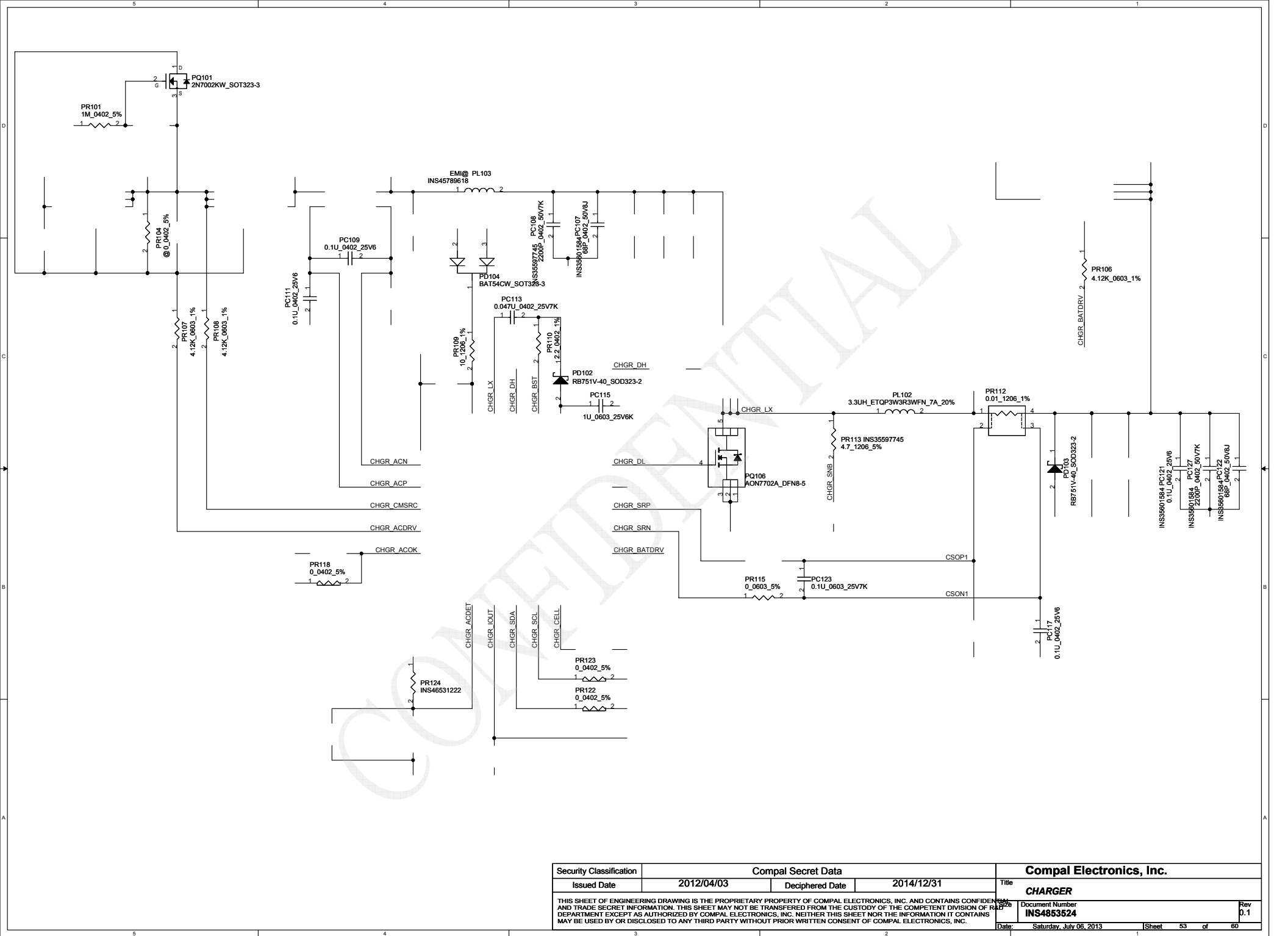


To Be Updated

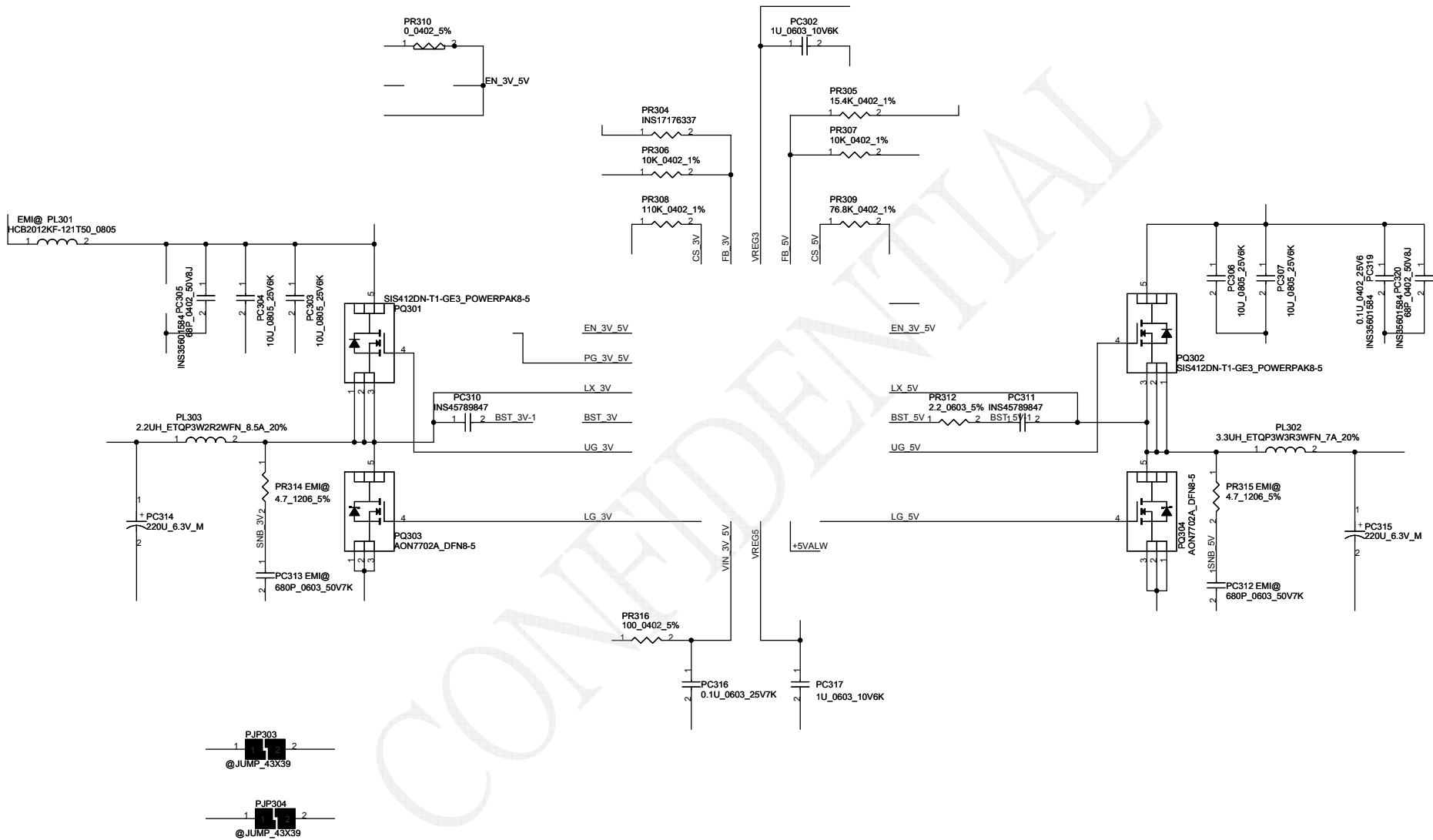
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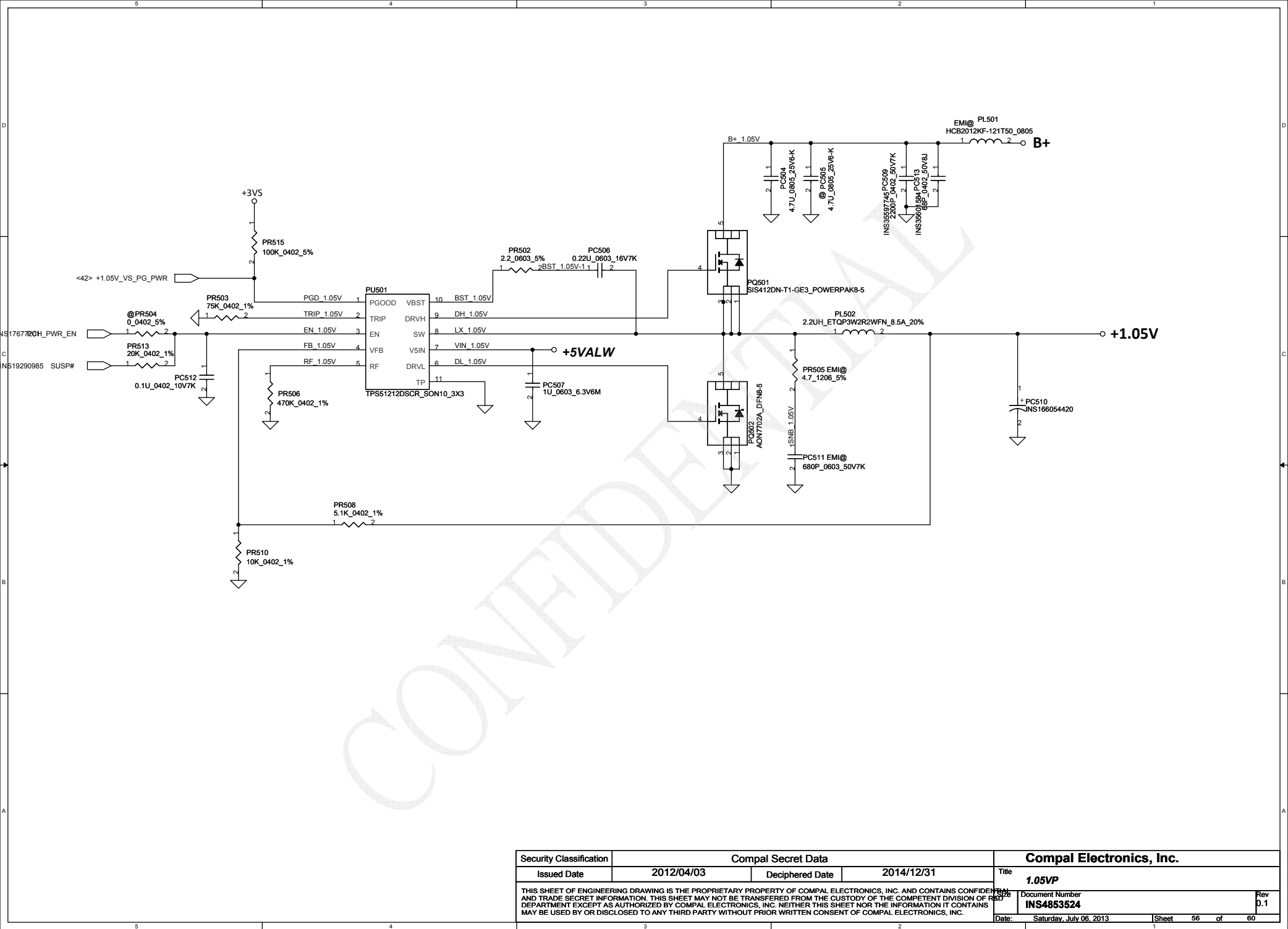
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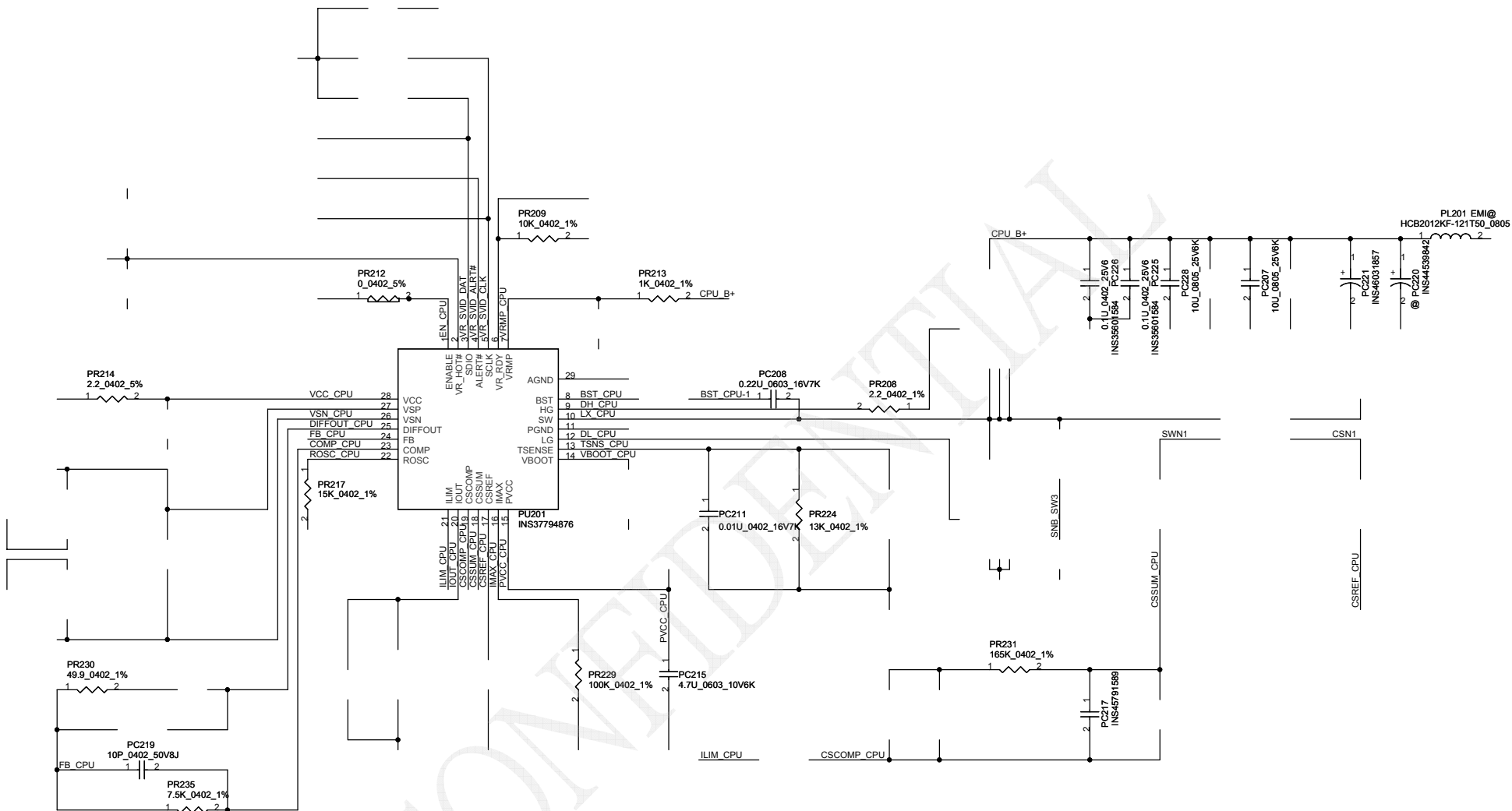


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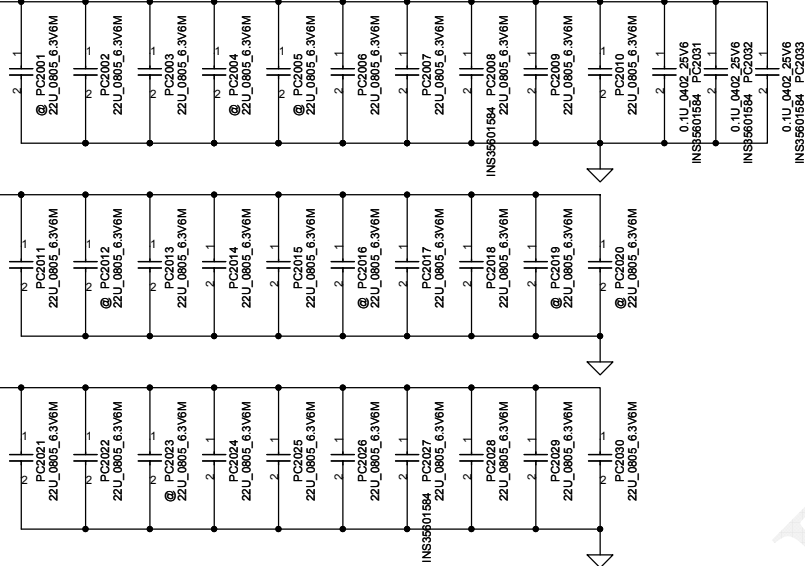




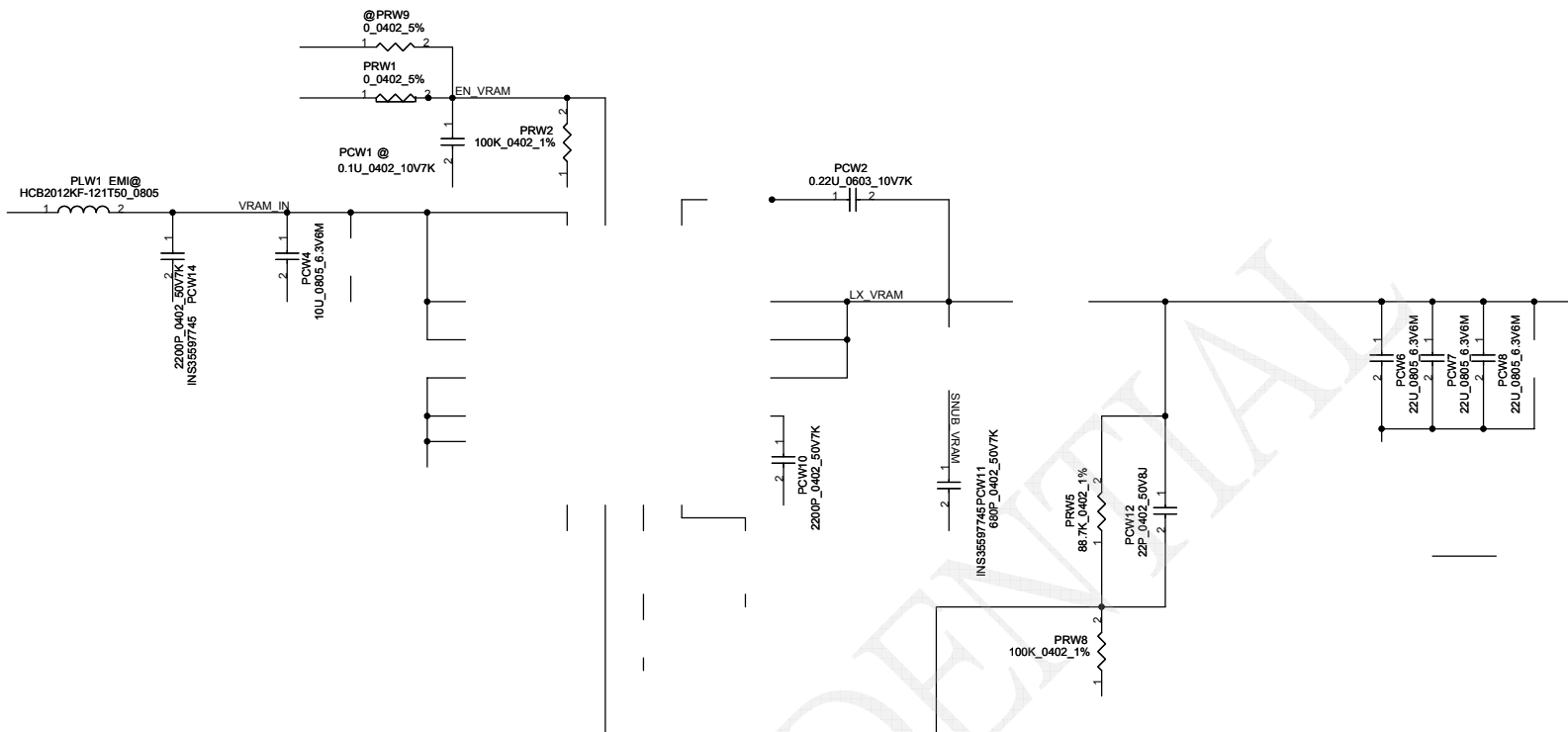
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+VCC_CORE

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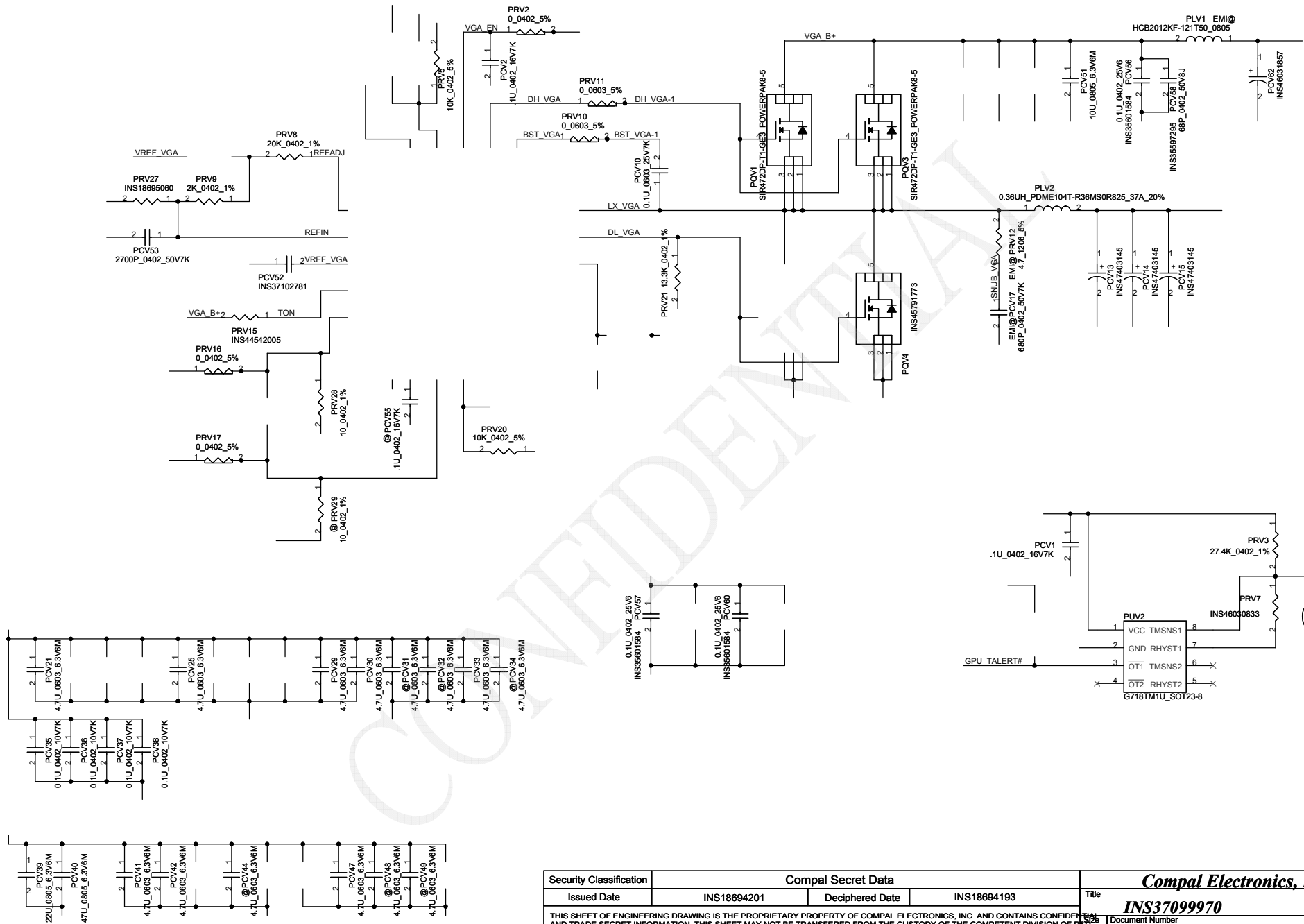
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